

LONDON METROPOLITAN UNIVERSITY

Faculty of Computing

A Knowledge Management Framework for the Postal Sector:

By

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**Draft thesis submitted in partial fulfilment of the requirements of
the London Metropolitan University for the degree of Doctor of
Philosophy**

United Kingdom

2015

ABSTRACT

Today's economy is generally referred to as a knowledge-based economy. Organizations now recognize the value of "knowledge" and strive to achieve better management of their knowledge assets. Knowledge is a critical factor for building organizational innovation and sustaining competitive advantage.

The future for the postal sector is more challenging than ever. Its potential value and relevance as a service provider in the knowledge economy are also greater than ever before. However, the services of the postal sector in this knowledge age are facing greater challenges as a result of technological advances, market liberalization, and globalization and government reforms.

To address these challenges, technical cooperation and interactions are promoted within the sector by the UPU to allow the sharing of experiences and best practices among postal organizations to facilitate sustainable development, high-quality postal services, creativity and innovation in the postal sector.

However, the existing Knowledge Management Frameworks (KMFs) do not adequately take into consideration the specific nature of the postal sector, particularly in relation to capturing, sharing and exploiting knowledge on postal operations or services. Therefore, this research addresses the development of a knowledge management framework for the postal sector.

To achieve the research aim, an extensive review of the related literature was carried out. A preliminary study was conducted on knowledge management practice in NIPOST and the UPU postal strategy plans (2009–2016) were examined to gain a better understanding of knowledge issues in the postal sector.

Based on these studies, the researcher developed the Knowledge Management Framework for the Postal Sector (KMPOST). Domain experts' opinion on and perception of the KMPOST framework were obtained from questionnaire and

interviews. The research adopted the action research approach using NIPOST as a case study to evaluate the KMPOST framework.

The research findings show that the KMPOST framework specifically contributed to the design and implementation of the KMS in NIPOST, which resulted in improved staff productivity in managing ICT projects and enhanced operational efficiency and service quality of the International Postal System (IPS). This research is believed to be the first of its kind dedicated to the development of a KM framework in the postal sector.

The KMPOST framework also could be used as a conceptual framework that could permit researchers to investigate further the entire framework and its potential influence on designing KMS in the postal sector.

ACKNOWLEDGEMENTS

First and foremost, I want to thank God for enabling me to start and complete this research work. He has been faithful to me through all its associated challenges.

I am deeply grateful to my supervisors, Dr Romas Mikusauskas and Mrs Preeti Patel, whose help, suggestions and support assisted me throughout the research work. I would like to acknowledge and thank them for their tremendous support and guidance in my research.

I would particularly like to thank Professor Farhi Marir, who inspired me to study knowledge management and supported me during the research work.

Thanks must go to Mal. Ibrahim Mori Baba (the Postmaster General of the Nigeria Postal service) for allowing me to pursue this research programme. I would like to thank Mr Namenh Atoo and Mr Bitiyong I.Yashim for reviewing the draft thesis. I would also like to thank Mr Yaki Akawo for analysing the data for this research.

My biggest obligation of gratitude and my deepest thanks are due to my wife, Mrs Cecilia Gaga, and my children, Victor, Jonathan, Rose and Fimi, who have supported me and prayed for my success during my PhD. Thank you so much for everything. Many warm thanks are reserved for my late parents, my brothers and my sisters.

Further thanks go to the staff of NIPOST and all others who have contributed directly or indirectly to the success of my research.

DECLARATION

I declare that the research contained in this thesis was carried out by me. It has not been previously submitted to this or any other institution for the award of a degree or any other qualification.

Gaga Thomas Ali

Glossary of Terms

Critical Information refers to reliable information that enables managers and their employees to take promptly and accurate decisions and actions.

Explicit knowledge is the knowledge that is documented and accessible to the organization.

Human Creativity refers to ability of the employees and organizations to provide innovative products and services in a better and unique way to meet the satisfaction of its customers.

Human-social system is referring to creating the conducive business environment for interaction in postal organizations

Individual knowledge is the knowledge that resides in an individual mind.

Knowledge is referring to the act of possession or the ability to quickly locate the desired information or know-how by employees and organizations

Knowledge Management System is a system that facilitates the practice of collaboration and communication within and outside the organization among employees to identify, capture, store, share and apply organizational knowledge resources for sustainable development by enhancing employees' productivity and organizational operational efficiency.

Knowledge Management System framework is a collection of interrelated attributes and factors that provide a comprehensive system that facilitates the practice of knowledge management among employees within and outside the organization to

identify, capture, store, share and apply organizational knowledge resources to achieve organizational objectives.

Learning is the act of acquisition of new knowledge or skill from best practices by postal employees and organizations

Organizational Knowledge is a collection of employees' experiences and lessons learned from best practices on the job and in training over the years.

Organizational Knowledge Management is the practice of identifying, harnessing and exploiting employees' collective experiences and lessons learned from best practices on the job and training over the years in an organization for the purpose of attaining organizational objectives.

Organizational Philosophy is the main values, expectations and principles that work for the postal organizations in achieving its goals and pursuing its activities

System Thinking is a holistic approach to analysis of an organisation as a whole system focusing on the way the organisation and how it work in order take better decision and act appropriately.

Tacit knowledge is the knowledge that employees have in their minds.

Technology is referring to the collection of techniques, methods and processes used to provide products and services to accomplish organization's objectives.

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LIST OF ABBREVIATIONS

Abbreviation Definition

ADS	Active Design Support
APM	Area Postal Manager
CA	Council of Administration
COP	Community of Practice
CSFs	Critical Success Factors
DCDEV	Development Cooperation Directorate
DKM	Distributed Knowledge Management
DPM	District Postal Manager
DPMG	Deputy Postmaster General
DPS	Doha Postal Strategy
EKP	Enterprise Knowledge Portal
E&TS	Engineering and Technical Service
F&I	Finance and Investment
HRM	Human Resource Management
IB	International Bureau
ICT	Information and Communication Technology
IPDPS	Integrated Postal Reform and Development
IPS	International Postal System
IT	Information Technology
ITU	International Telecommunication Union
KE	Knowledge Economy
KM	Knowledge Management
KMF	Knowledge Management Framework

KMI	Knowledge Management Initiative
KMPOST	Knowledge Management Framework for the Postal Sector
KMS	Knowledge Management System
KN	Knowledge Node
LO	Learning Organization
MIP	Multi-year Integrated Project
NIPOST	Nigerian Postal Service
NPS	Nairobi Postal Strategy
PMG	Postmaster General
POC	Postal Operation Council
PSP	Postal Strategy Plan
PTC	Postal Technology Centre
QOS	Quality of Service
QSF	Quality of Service Fund
RDP	Regional Development Plan
SD	Special Duty
SITI	Shell Information Technology International
SMEs	Small and Medium Enterprises
UPU	Universal Postal Union

CHAPTER ONE

Introduction

1.1 Background

Today's economy is generally referred to as a knowledge-based economy. In this economy, knowledge is a major creative force of the knowledge worker (Mladkova, 2011). Organizations now recognize the value of "knowledge" and strive to achieve better management of their knowledge assets.

The essence of managing knowledge in an organization is developing and enhancing the organizational capability to innovate and to sustain competitive advantage (Leal-Rodriguez et al., 2013, pp. 62–71). Knowledge is a critical factor for building organizational innovation and sustaining competitive advantage. It is created through interaction and learning within and around an organization's environment.

Knowledge management (KM) is the process that helps organizations to find, select, organize, disseminate and transfer important information and the expertise necessary for their activities (Taghvaei and Eskandari, 2011, pp. 472–479). Building organizational knowledge enhances workers' productivity, promotes innovation, facilitates better decision making and avoids reinvention of the wheel in an organization, which would result in a loss of money and time.

To manage organizational knowledge effectively to promote innovation and competitive advantage, a knowledge management system (KMS) is needed. A KMS is viewed as "a class of information systems applied to managing organizational knowledge by supporting and enhancing the organizational processes of knowledge creation, storage/retrieval, transfer and application" (Alavi and Leidner, 2001, p. 114).

According to Davenport and Prusak (1998) and Nonaka and Takeuchi (1995), most successful organizations in the world manage their knowledge well. The number of organizations implementing KM is growing progressively (Moffett et al., 2003). The reason for the growth in the number of organizations implementing knowledge

management is attributed to the changes in the business environment, which emphasize the importance of a greater understanding of knowledge-intensive work, such as how people think, learn and use knowledge (Nonaka and Takeuchi, 1995). It is important and necessary for organizations to adopt and implement KM to survive the competition and gain a competitive advantage in this knowledge economy (KE) age.

The services of the postal sector in this knowledge age are facing greater challenges as a result of technological advances, market liberalization, and globalization and government reforms carried out in different countries.

As a result of these challenges, the postal sector is experiencing significant transformations. These transformations are aiming to take advantage of emerging opportunities and respond to future challenges. The transformations in the postal sector are driven by the Universal Postal Union (UPU). UPU is an intergovernmental organization and a specialized agency of the United Nations; it developed strategic roadmap for the postal sector. The roadmap sets out clear goals or objectives and programmes to tackle the challenges facing the postal sector.

The focus of these objectives and programmes is to facilitate sustainable development, high-quality postal services, creativity and innovation in the postal sector. To achieve these objectives, technical cooperation and interactions are promoted within the sector by UPU to allow the sharing of experiences and best practices among postal organizations. However, no specific knowledge management framework appears to have been developed for this sector. That is, the existing frameworks do not adequately take into consideration the specific nature of the postal sector, particularly in relation to knowledge capturing, sharing and exploiting, to improve the performance and service quality of postal products and services.

Therefore, this research addresses the development of a framework (KMPOST) for designing KMS in the postal sector. The investigations in this research stress the identification of the key factors and attribute that influence the successful implementation of knowledge management system in the postal sector.

1.2 Research Motivation

The 2005–2007 reform programmes of the Federal Government of Nigeria resulted in the retirement of about 3000 workers of the Nigeria Postal Service (NIPOST), many of whom had more than 15 years of working experience. The skill, experience and knowledge of these workers were lost to the organization. Most of the retired staff are operational staff, they have acquired adequate experience in mail sorting, distribution and delivery.

The retirement of these experience staff affected the quality of service of mail delivery in 2007 to 2008; this resulted to decline in revenue generation of the organization. Therefore, the motivation for this research is to look at how knowledge management implementation could improve knowledge sharing and retention in NIPOST and the postal sector in general and to develop a knowledge management framework for designing KMS in the postal sector.

1.3 Justification of the Research

The purpose of this research is to develop a knowledge management framework for designing KMS in the postal sector, since no specific knowledge management framework appears to have been developed for the sector. The Nigerian Postal Service is used as a case study for this research work; however, the framework is expected to benefit the entire postal sector.

The justification for this research can be summarized as follows:

1. To gain a better understanding of knowledge management practice in the postal sector, especially as it relates to sharing experiences and best practices.
2. To contribute to the body of knowledge in the existing literature on knowledge management in the postal sector.

3. To present a better understanding of how KM could be approached effectively and to develop a KM framework for designing KMS for successful KM practice in the postal sector.
4. To improve the understanding of KM practices in NIPOST by presenting an empirical and analytical study to expand the existing literature on knowledge management.
5. To present the key critical success factors and attributes for implementing KM in the postal sector.

1.4 Problem Statement

A review of the literature suggested that there is evidence of KM practices among postal administrations; however, there is limited or no significant literature on the KM practice in the postal industry and no framework specifically developed for knowledge management implementation in the postal sector.

Considering this gap, and the increasing importance of and emphasis on knowledge within the postal workplace, the researcher deemed it important to gain an understanding of the current state of KM frameworks with a view to developing a knowledge management framework for the postal sector.

To develop the framework, the researcher chose NIPOST as a case study to find out current KM practice in NIPOST and identify the challenges. The researcher also studied existing KMS frameworks, identifying their strengths and weaknesses and the approaches adopted. Lastly, the UPU's postal strategy plans for the postal sector in the years under review were examined. Based on this, a framework for knowledge management for the postal sector (KMPOST) was developed.

1.5 Research Aim and Objectives

The research aim is to develop a framework for the successful implementation of a KMS in the postal sector.

To achieve the aim of the research, the following objectives are proposed:

1. Review the relevant literature on knowledge management systems, knowledge management implementation and knowledge management system frameworks.
2. Analyse five selected KMS frameworks and use them as a benchmark for the development of the new framework.
3. Carry out a preliminary study of KM practice in NIPOST.
4. Study the UPU postal strategy plans for 2009–2016.
5. Develop a framework for knowledge management (KMPOST) for implementation in the postal sector.
6. Obtain expert opinion on and perceptions of the KMPOST framework.
7. Evaluate the KMPOST framework in NIPOST.

1.6 Research Questions

To achieve the desired aim of the research, the following research questions need to be addressed:

1. What are the challenges of implementing the existing knowledge management frameworks?
2. What are the critical factors and attributes for implementing a KM in the postal sector?
3. Could the new framework (KMPOST) enhance the KM practice in the postal sector?

1.7 Research Scope

This research is “exploratory” in nature. It aims to identify the issues, attributes and factors involved in implementing KM in the postal sector. The scope of the research will be limited to identifying those factors and attributes critical for successful implementation of KMS in the postal sector. However, since it appears that there is no KM framework specifically developed for the postal sector and literatures concerning KM practices in the sector are limited, the research extended its study to similar KM frameworks developed in other sectors.

Therefore the scope of this research includes the following: (1) a review of the existing literature on KM and KMS frameworks, examining their approaches and key attributes; (2) the identification of the strengths and weaknesses of the existing KMS frameworks; and (3) the selection of five KMS frameworks from the reviewed literature as a benchmark for further analysis. These frameworks are analysed to identify their study objectives, their structure, their factors and attributes, the problem area that the KMS addresses and the KMS’s adopted focus and methodology; (4) the examination of the UPU postal strategy plans, their objectives and their goals, (5) the development of a knowledge management framework by extracting and combining the attributes of the selected KMS frameworks and those from the literature review; (6) obtaining experts’ opinion on the new framework (KMPOST); and (7) the evaluation of the new framework (KMPOST), using the Nigerian Postal Service (NIPOST) as a case study.

In this context, the research attempts to identify the critical factors that influence the successful implementation of KM practice in the postal sector. The research also attempts to develop a knowledge management framework for the postal sector (KMPOST) that will address its KM needs.

1.8 Overview of the Research

An overview of this research is presented in figure 1.1, it presents the summaries of the research work, the issues, processes, methods and the findings.

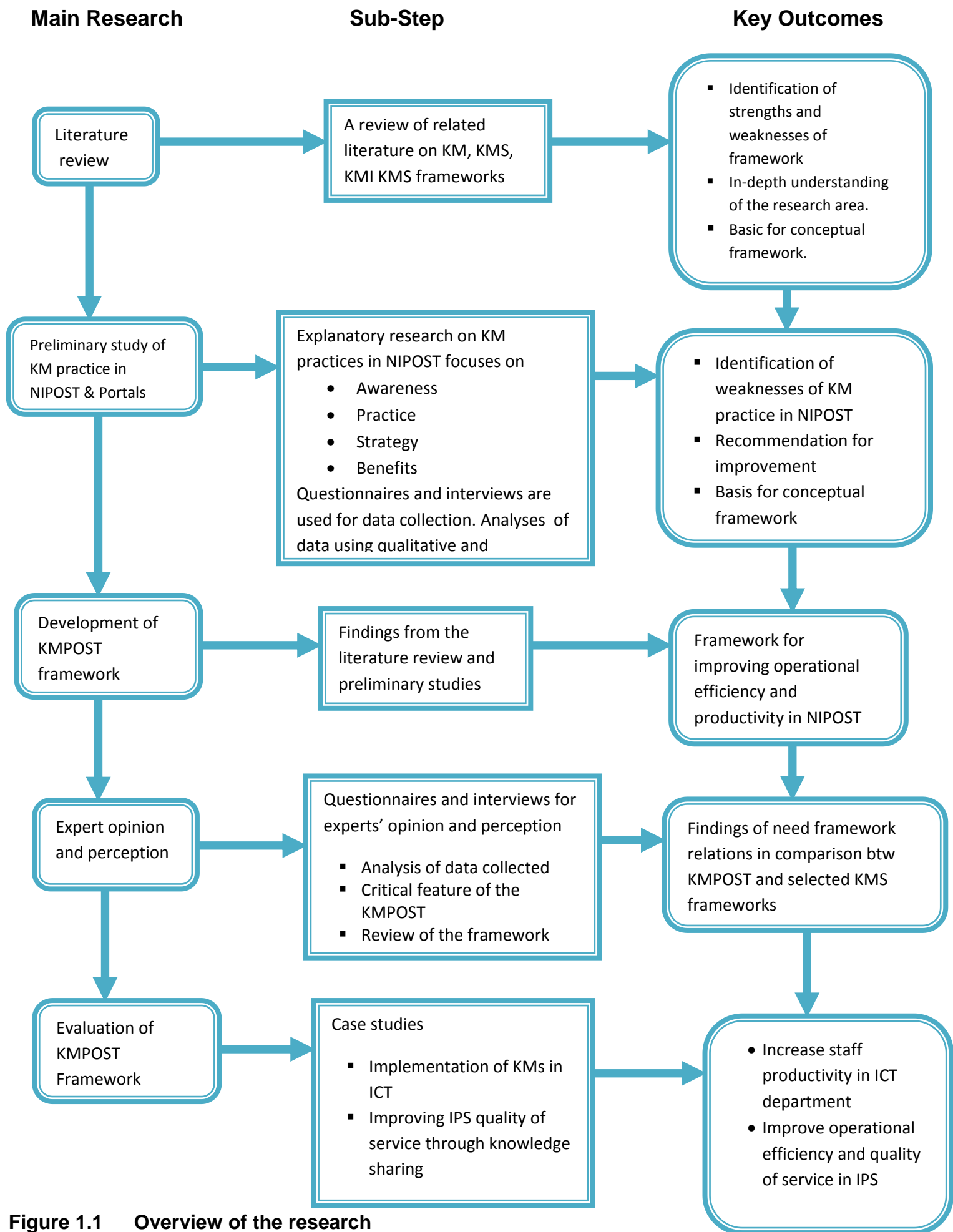


Figure 1.1 Overview of the research

1.9 Outline of the Thesis

This study is set out in eight main chapters. A brief synopsis and indicative content of each chapter are summarized as follows:

Chapter One – Introduction:

The first chapter introduces the research. It provides the research background and states the research problem, the objectives and the aims of the study. This chapter also presents the research scope and an overview of the research methodology.

Chapter Two – Literature Review

This chapter introduces the concepts of knowledge management fundamentals and the sources of knowledge in an organization. It explains the types of knowledge and the methods of knowledge conversion. The chapter reviews knowledge management system implementation.

It presents and discusses various knowledge management frameworks and their attributes. It presents the strengths and weaknesses of each framework. The implementation of KMS frameworks is also discussed.

Chapter Three – Critical factors for KM framework

This chapter describes the five selected KMS frameworks and the criteria for their selection. Analyses of the selected KMS frameworks are also presented. Comparative analyses of the attributes of the frameworks are outlined. It also presents an overview of the postal sector, the Universal Postal Union and the Nigerian Postal Service. It presents the need for knowledge management practice in the postal sector. The Universal Postal Union activities related to knowledge sharing in the postal sector are also examined. An overview of KM practices in NIPOST as an organization was presented.

Chapter Four – Research Methodology

The chapter presents the research methodology employed in the research work. The research design and processes are explained. Then, the justification of the research approach and processes is discussed.

Chapter Five – Data Analysis

This chapter presents the description and analysis of the data collected from the preliminary research in NIPOST. It also presents the limitations of KM practice in NIPOST and makes suggestions for improving KM practice. Experts' opinions on and perceptions of the KMPOST framework are presented. The critical features of the KMPOST framework are highlighted.

Chapter Six – Knowledge Management framework for the Postal Sector

The chapter describes the development of the conceptual framework for the postal sector. It provides a review of the knowledge management theory and practices that contribute to building the framework. It explains the pre-field framework and the post-field framework of the KMPOST framework. The factors and attributes of the KMPOST framework and their contribution to the development of the KMPOST are described. A comparison between the KMPOST framework and the selected KMS frameworks and finally the methodology for the implementation of KMPOST are presented.

Chapter Seven – Evaluation of the KMPOST framework

This chapter presents the two case studies conducted to evaluate the KMPOST framework in NIPOST. The analysis and the findings are presented. Observations and suggestions are offered.

Chapter Eight – Conclusion and Recommendations

This chapter presents the implications of the research in the postal sector. The contributions of the research work are outlined. Lastly, the limitations and suggestions for further research are identified.

CHAPTER TWO

Literature Review

2.1 Introduction

This chapter presents a review of relevant works on knowledge management by other authors. It analyses the literature to evaluate the current issues regarding knowledge management.

The chapter starts with an overview of the concepts of knowledge, knowledge management and knowledge management systems. It looks at the three different perspectives of knowledge management systems, social, technical and social–technical. It also identifies the approaches adopted in implementing the knowledge management system, their attributes and their strengths and weaknesses.

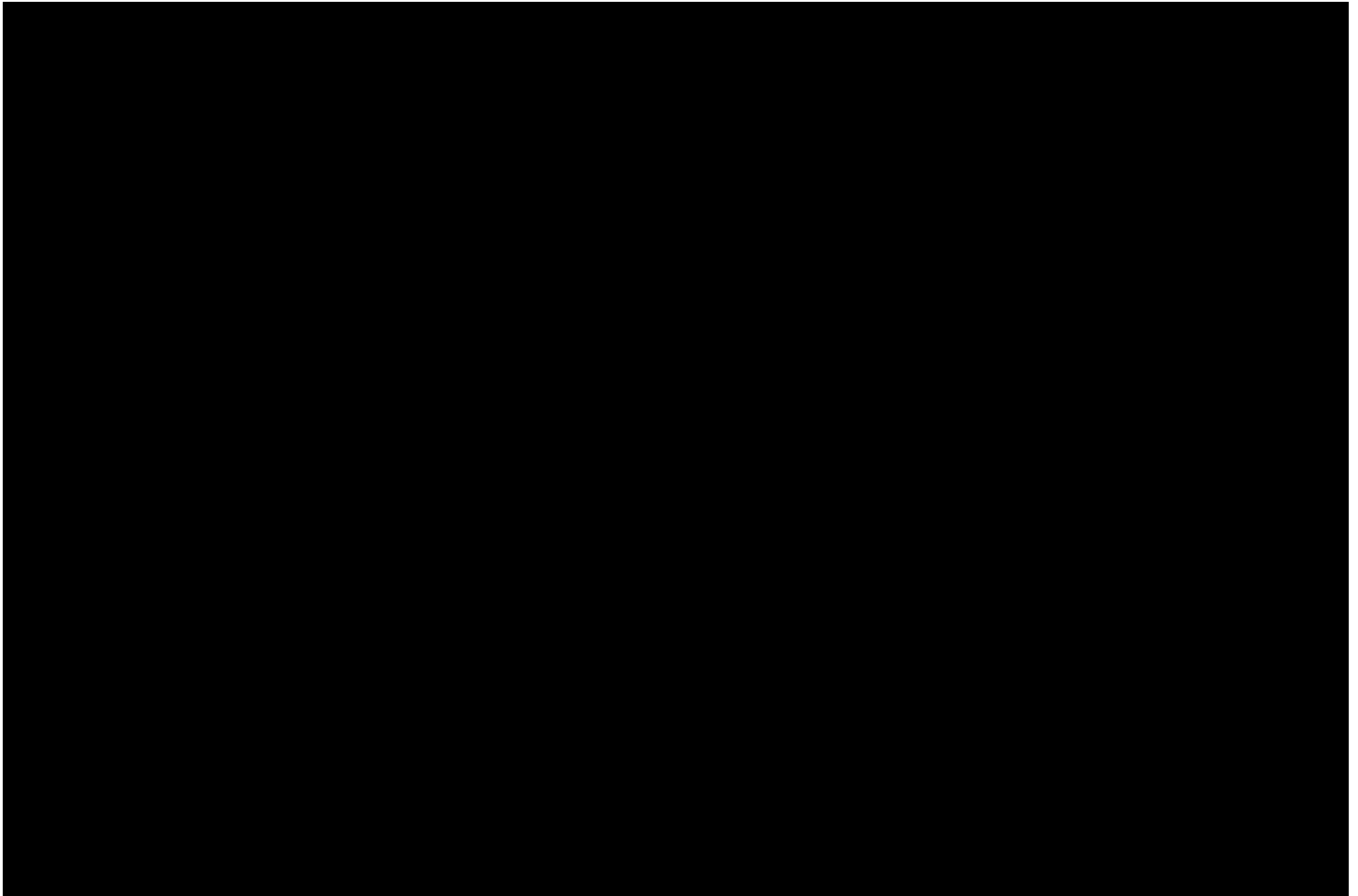
This chapter also describes a number of KMS frameworks. This is aimed at learning from the issues of the current frameworks and use the observations and findings to enhance the development of the Knowledge Management Framework for the Postal Sector (KMPOST).

2.2 Knowledge

The literature presents numerous definitions of the term “knowledge”. However, there is no universally agreed definition of this term. The definition depends upon the context within which the term is used (Sveiby, 1997).

Davenport and Prusak (1998) view knowledge as a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluation and the incorporation of new experiences and information. From an organizational perspective, knowledge is often embedded not only in documents or repositories, but also in the organizational routines, processes, practices and norms.

According to Patel et al. (1999), the term “knowledge” can be defined as “a body of information coupled with understanding and reasoning”. In this context, knowledge can therefore be extended to include the cognitive ability to generate insights based on information and data. These are considered to be gained through experience or study. The authors further articulate that knowledge can appear in the form of formal documentation and/or experiences, the details of which can be seen in figure 2.1.



Knowledge, as argued, needs to be seen in the context of the decisions or action taken. Therefore, it is necessary for organizations to manage the procedures through which knowledge is captured, processed and disseminated (Patel et al., 1999).

For the purpose of this research, knowledge is viewed from an organizational perspective and is defined as a collection of employees’ experiences and lessons learned from best practices on the job and in training over the years.

Data, Information and Knowledge

The distinction between data, information and knowledge is not always obvious. Hence, this study summarizes these terms to avoid ambiguity as follows:

Data are considered as raw facts or uninterpreted material. They consist of factual measurements, such as simple observations lists of tasks, and so on, on which a decision is to be based. A fact is a thing known to be true or to exist.

Information is data interpreted in a given context. It is data that have been processed and to which meaning has been added. Different information may be gleaned from a single data source in different contexts.

Knowledge is a body of information, coupled with understanding and reasoning. It is the cognitive ability to generate insights based on “information” and “data”.

The relationship between data, information and knowledge is shown in figure 2.2. Knowledge, as depicted in figure 2.2, is about the understanding and actual use of information to achieve a desired goal or objective of an individual or organization. It is broader, deeper and richer than data or information.

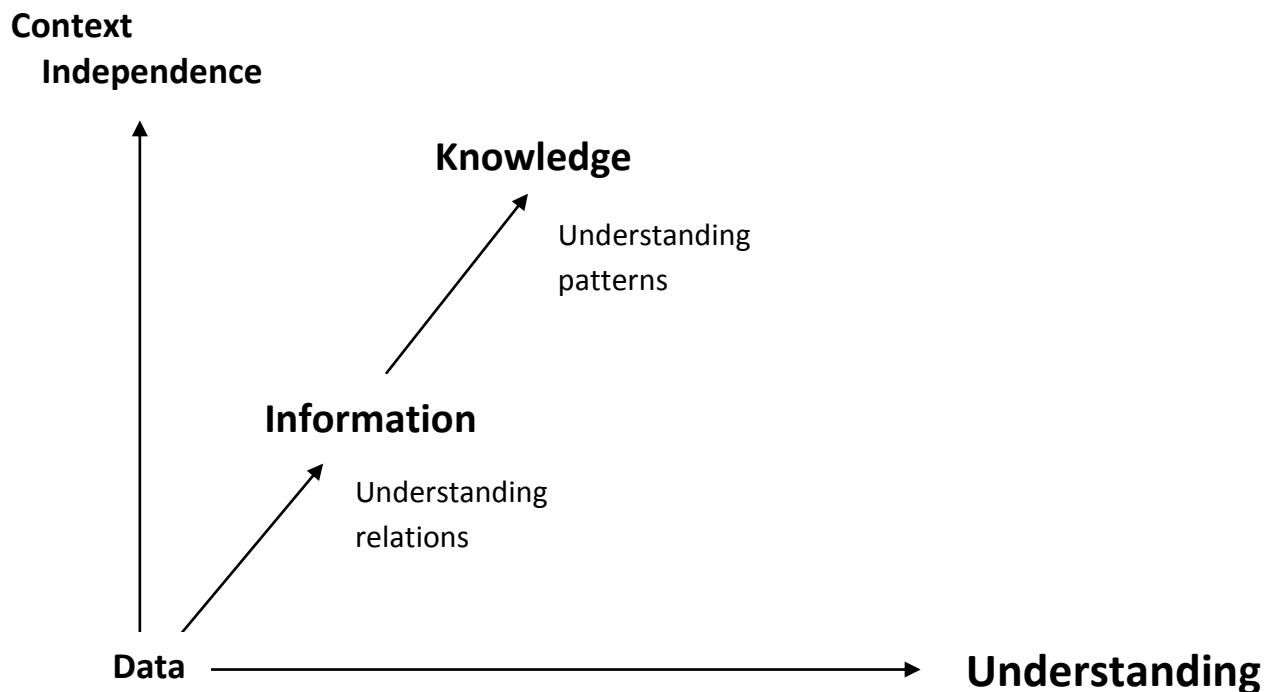


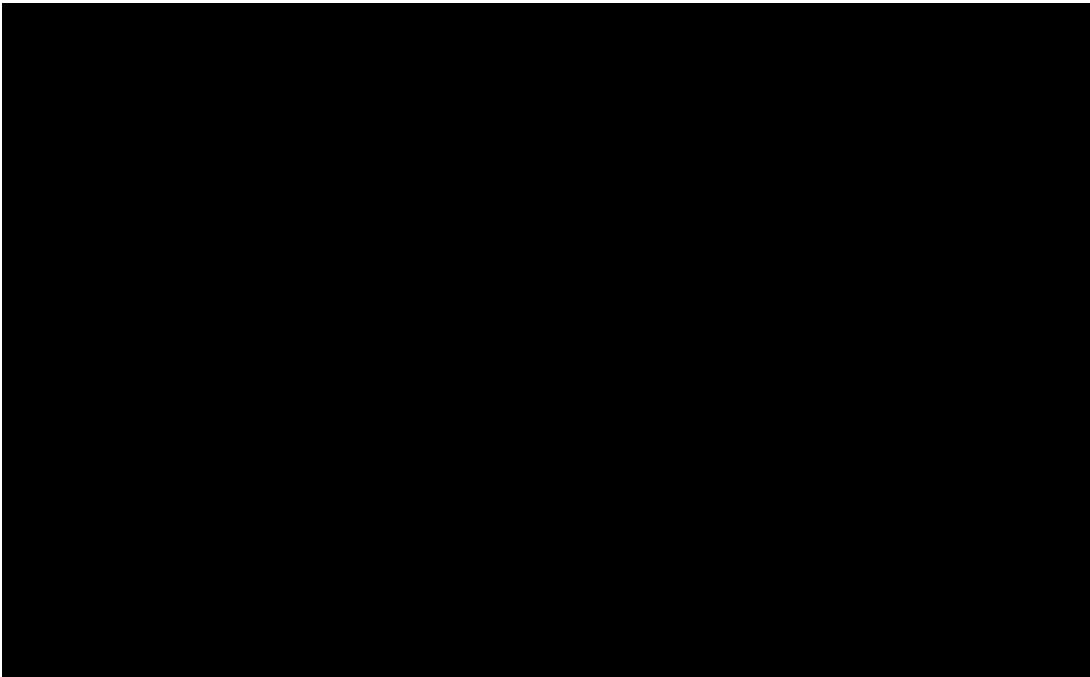
Figure 2.2 Relationship between data, information and knowledge

2.3 Types of Knowledge

Knowledge can be broadly classified as individual knowledge and organizational knowledge.

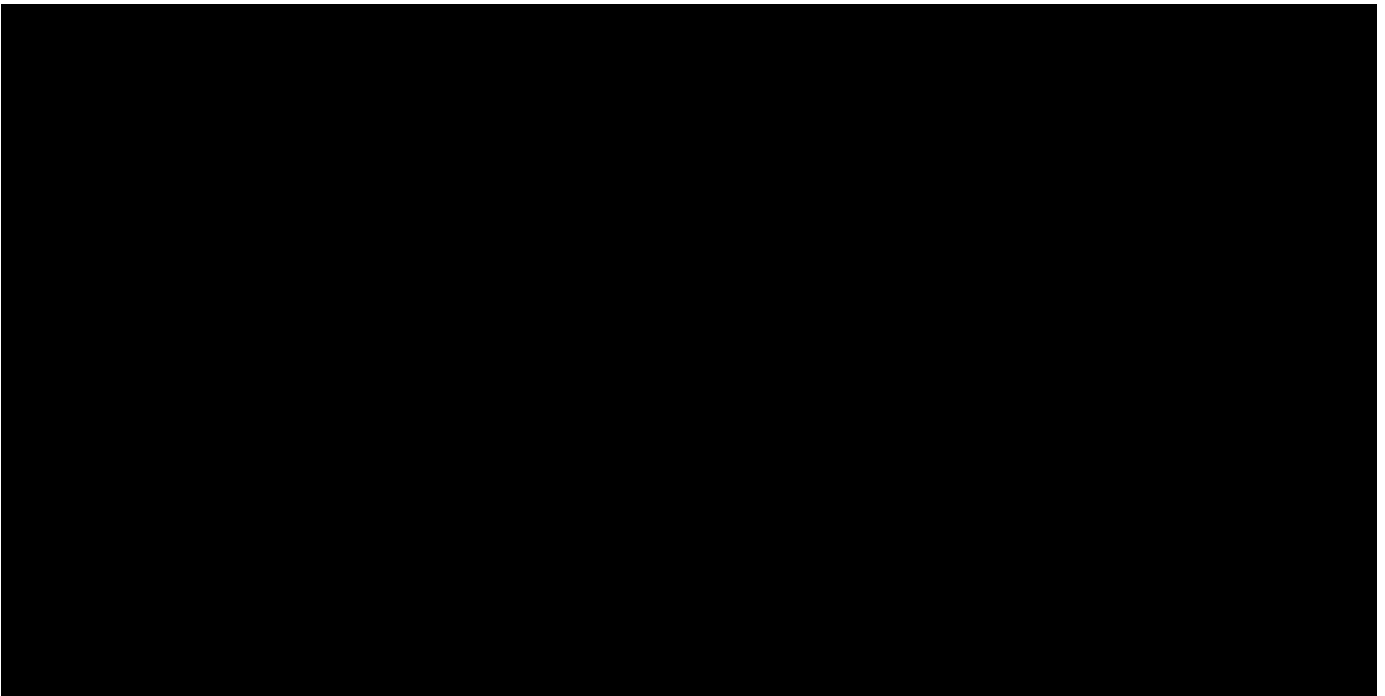
2.3.1 Individual and Organizational Knowledge

Individual knowledge is that knowledge that resides in an individual mind. It is subjective in nature. Organizational knowledge is the collective knowledge of organizational employees that is formed through interactions among the employees in the organization. Organizational knowledge grows over time, as employees in the organization gain experiences on the job. Figure 2.3 depicts the two types of knowledge.

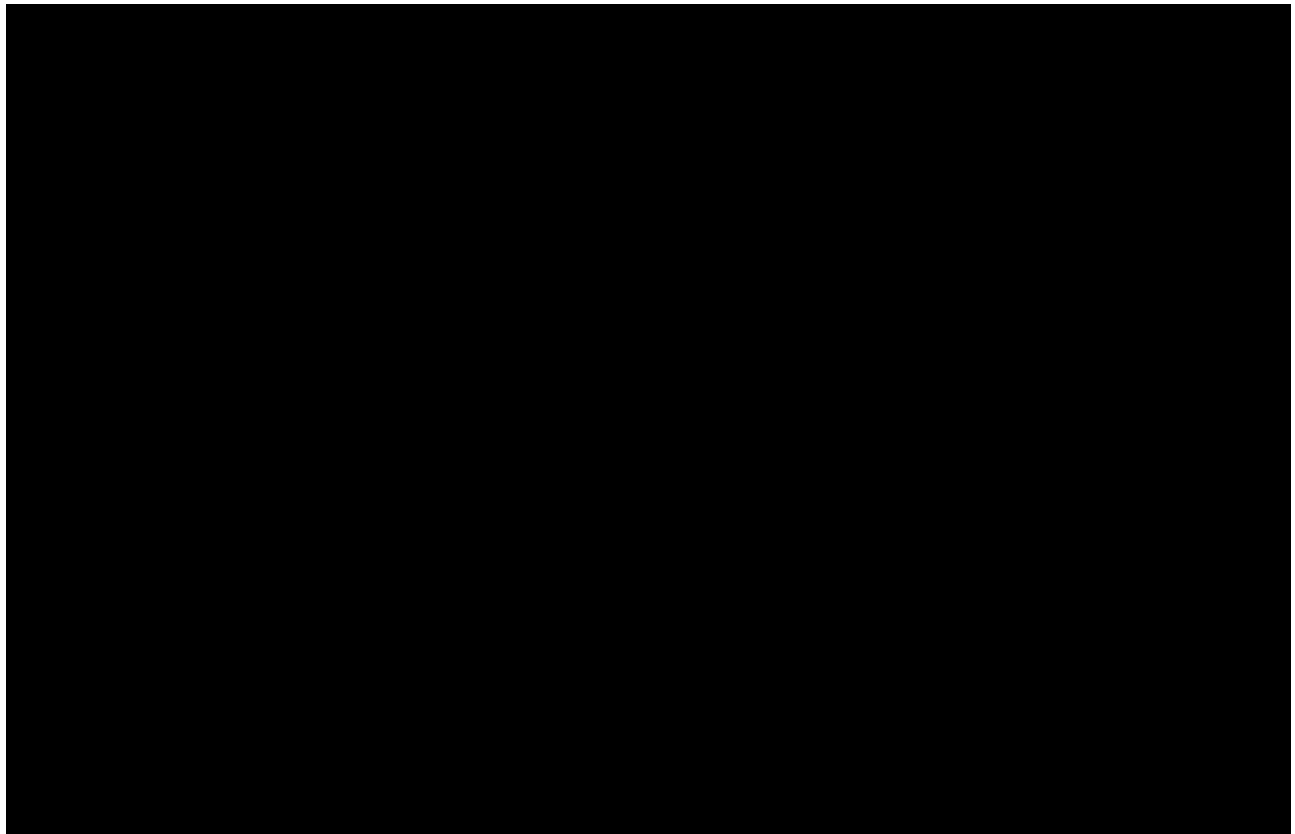


2.3.2 Explicit and Tacit Knowledge

Knowledge could also be classified as explicit knowledge or tacit knowledge. Explicit knowledge is that knowledge that is documented and accessible to people. It can be found in a range of diverse sources, such as database, minutes of meetings, the Internet and so on. Kanti and Koenig (2000) reveal some sources of explicit knowledge as shown in figure 2.4.



Tacit knowledge is highly personal and hard to formalize. Subjective insights and intuition fall into this category of knowledge. Tacit knowledge is the knowledge that people have in their minds and is much less “concrete” than explicit knowledge. It is more of an “unspoken understanding” about something: knowledge that is more difficult to write down. Tacit knowledge can be difficult to access, as it is often not known to others. In terms of tacit knowledge suppliers, Kanti and Koenig (2000) indicate some sources for tacit knowledge as illustrated in figure 2.5.



2.4 Knowledge Conversion

Nonaka and Takeuchi (1995) perceive knowledge as the product of the interaction of explicit and tacit knowledge. Four types of interactions can occur: from tacit to tacit (socialization); from explicit to explicit (combination); from tacit to explicit (externalization); and from explicit to tacit (internalization).

The basic characteristics of the four modes of knowledge conversion are depicted in figure 2.6.



2.4.1 Socialization

“Socialization” describes the modification of tacit knowledge into other types of tacit knowledge. This process includes the sharing of experiences, ideas, images, mental models and technical skills. It takes place through joint activities, observation, imitation and practice rather than written instructions. The investigation of the social gatherings and the appropriate working conditions plays an important role in this form of knowledge transition.

2.4.2 Externalization

“Externalization” refers to the conversion of tacit knowledge into explicit knowledge; hidden tacit knowledge, such as ideas, concepts, visuals, metaphors, analogies, narratives and so on, is articulated and converted into an understandable format. Computer-based techniques (visual modelling, inductive/deductive inference mechanisms, machine learning methodologies, case-based reasoning, decision

support systems, etc.) are able to support individuals in describing, expressing and explaining their inherent conceptualization.

2.4.3 Combination

“Combination” refers to the explicit-to-explicit conversion. It involves the mixture of different bodies of explicit knowledge to produce more complex sets of explicit knowledge. The codification of knowledge and its communication, diffusion and integration are integral parameters for the efficient and valid functioning of knowledge combination. Explicit knowledge can be collected either internally or externally to the organization and then combined, edited and processed to form new knowledge.

2.4.4 Internalization

“Internalization” refers to the extension of explicit knowledge to tacit knowledge. Learning by doing, on-the-job training and learning by observation, face-to-face meetings, listening to others’ stories, simulations and experiments are some of the usual practices establishing the internalization procedures. Internalization produces experience knowledge through the explicate source; the individual acquiring the explicit knowledge embodied in action and practice can re-experience what others have experienced.

2.5 Knowledge Management

Knowledge management has attracted a great deal of attention from both academia and practitioners (Bhatt, 2001; Metaxiotis et al., 2002; Wiig, 1993). A review of the current literature revealed numerous definitions of knowledge management due to the wide range of interests, perspectives and issues represented by various authors.

According to Rusli et al. (2011), knowledge is derived from information and it includes experiences, values, insights and contextual information, which help in the evaluation and incorporation of new experiences and the creation of new knowledge. Knowledge

management is also defined as a formalized and integrated approach to managing an enterprise's articulated and tacit knowledge assets (Klein and Prusak, 1994).

Knowledge can be viewed from different perspectives: (1) a state of mind, (2) an object, (3) a process, (4) a condition of having access to information and (5) a capability (Alavi and Leidner, 2001). The authors further explain that these different views of knowledge lead to different perceptions of knowledge management by different stakeholders. For example, if knowledge is viewed as an object and is equated with information access, then knowledge management should focus on building and managing knowledge stocks. If knowledge is viewed as a process, then knowledge management should focus on the knowledge flow and the processes of creating, sharing and distributing knowledge. The view of knowledge as a capability suggests a knowledge management perspective centred on building core competencies, understanding the strategic advantage of know-how and creating intellectual capital.

In the same light, knowledge management (KM) is promoted by professionals and scholars alike from different perspectives. For example, the management literature promotes KM as a novel and strong managerial tool. The organizational literature advances KM as an effective means for implementing organizational learning for innovating and guaranteeing continuity. The business literature portrays KM as a productivity-enhancing tool (Hamid and Hara, 2007).

The implication of these various concepts of knowledge is that each perspective suggests a different strategy for managing knowledge. It also gives a different perspective of the role of information technology in supporting knowledge management.

Some studies, such as Chen and Huang (2009) and Fugate et al. (2009), note that knowledge management processes have a positive effect on organizational performance. Some organizations that have already embarked on a KM programme have benefited in a number of ways, including improved employee skills, better decision making and increased innovation (Jennex, 2007).

Knowledge management encompasses everything that an organization carries out to make knowledge available to its employees, including embedding key information into systems and processes, applying incentives to motivate employees and forging alliances to infuse new knowledge into the business. According to Yasaman and Amin (2011), knowledge management is the practice of harnessing and exploiting intellectual capital to gain a competitive advantage and customer commitment through efficiency, innovation and effective decisionmaking.

For the purpose of this research, Yasaman and Amin's (2011) definition of knowledge management is adopted with some modifications. Therefore, organizational KM is considered as the practice of identifying, harnessing and exploiting employees' collective experiences and lessons learned from best practices on the job and training over the years in an organization for the purpose of attaining organizational objectives.

2.6 Knowledge Management Systems

According to Rusli et al. (2010), a knowledge management system is a tool used for the creation of knowledge repositories, the improvement of knowledge access and sharing as well as communication through collaboration. It enhances the knowledge environment and manages knowledge as an asset for an organization. They state that for an organization to manage its knowledge adequately, it requires a KMS. This system allows users to work together at any given time and place, regardless of the platform that they are using. That is, it is an instrument for collaboration within and among organizations for the purpose of creating, storing, sharing and applying knowledge.

The recent literature recognizes KMSs as state-of-the-art innovation tools pertinent to business practitioners. It also emphasizes KMSs as tools for creating and maintaining a competitive advantage in increasingly dynamic business environments (Alavi and Leidner, 2001; Davenport and Prusak, 1998). These include the capacity of the

organization as a whole to create new knowledge, disseminate it throughout the organization and embody it in its products, services, systems and procedures.

KMSs as critical tools for transforming knowledge resources into intellectual capital for competitive advantage in organizations have become an integral part of the organizational agenda (Rusli et al., 2006). Davenport et al. (1998) define a KMS as a system that is designed and developed to give decision makers and users in organizations the knowledge they need to make effective decisions and perform their tasks better.

According to Alavi and Leidner (2001), KMSs are a class of information systems applied to manage organizational knowledge. They are IT-based systems developed to support and enhance the organizational processes of knowledge creation, storage, retrieval, transfer and application. Rusli et al. (2005) view KMSs as tools used for the creation of knowledge repositories, the improvement of knowledge access and sharing as well as communication through collaboration.

The above definitions of KMSs focus more on technical perspectives, while neglecting the human perspective of KMS activities. Some authors define KMSs from the human perspective only, such as Holsapple and Joshi (2002), who state that knowledge activities are created by the social interactions of individuals, community and organization.

The effectiveness of a KMS is dependent on the efficient interplay of the social and technological issues of KM. This is because organizations today are confronted with more complex challenges, such as globalization, market liberalization, hypercompetition, technological advancement and so on. Approaching these challenges from either a technological or a social perspective only will be inadequate. Therefore, a combination of the social and technological approaches to knowledge management is considered as the most appropriate in this research. That is, KM should focus on the importance of human experience, insight and action as a factor of knowledge management activities and the role of technology as an enabler of these

knowledge management activities. Therefore, this emphasis demands a social–technical approach to KMSs.

2.7 Social–Technical Knowledge Management Systems

The term “social–technical” aims to emphasize the interplay of the social and technological systems of KM and its relationship as a whole to the environment in which it operates. According to Yang and Chen (2009), the social–technical view of the knowledge management system focuses on a firm’s strategy for harmonizing knowledge activities with technological drivers and social enablers to achieve its business objectives. This view is supported by Yasaman and Amin’s (2011) definition of a knowledge management system, in which a KMS is defined as the integration of organizational culture, organizational information technology infrastructure and individual and collective experiences, learning, insights, values and so on.

Smuts et al. (2009) state that, in today’s dynamic business working environment, a KMS is more than just an information system or IT-enabled tool that supports knowledge management activities. Instead, a KMS must be a social–technical system as a whole, which comprises the knowledge itself (the intellectual capital of the organization), the organizational attributes and intangibles such as culture, policies and procedure, as well as the technological system. A KMS could be viewed as a living dynamic system that involves six subsystems: information processes, social processes and the human interactive, collaborative, cultural and organizational learning subsystems (McNabb, 2007).

These definitions stress the balance and integration of technological and social perspectives in enabling organizations to manage knowledge more effectively. That is, while technology facilitates the collaboration, communication and storage of information, social factors improve the comprehension of knowledge assets. The existing models of social–technical knowledge management systems demonstrate the importance of the interplay of the knowledge management process, organizational context and technology.

For the purpose of this research, the social–technical approach to KMSs is considered, and a KMS is viewed as a system that facilitates the practice of collaboration and communication within and outside the organization among employees to identify, capture, store, share and apply organizational knowledge resources for sustainable development by enhancing employees' productivity and organizational operational efficiency.

2.8 Knowledge Management System Implementation

Despite the fact that current knowledge management system implementations are based on highly advanced information technologies, there are still challenges in ensuring the effectiveness and efficiency of such initiatives (Arntzen and Martin, 2007). The authors state that these challenges are attributed to organizational culture and other psycho-social factors, which play an important role in the success of knowledge management initiatives (KMIs). According to them, the penetration of new technologies in the workplace aims to enhance efficiency. However, it generates new types of issues and challenges. For example, the selection and adoption of technology area complex process based on a number of alternatives, which include technological choices, perceived benefits, cost-based models and organizational strategies.

The authors outline the factors for successful implementation of a KMS in an organization as follows: communication, leadership, training, a clear business strategy, aligning business goals with technologies, collaboration and adaptive culture. They conclude that the success of a KMS hinges on the interplay between these factors.

A knowledge management implementation strategy should align with the organizational business strategy, or the KMI will fail to accomplish its goals and objectives (Sunassee and Sewry, 2003). These business strategy factors are: alignment of the knowledge management strategy with the business strategy, top management support, a knowledge culture, the use of a pilot project, organizational

learning, people, the right technology and double-loop learning. The authors state that some aspects of the model have been validated through empirical study. The full-scale implementation of a KMS using the model is yet to be validated.

Rewards and incentives are critical factors in facilitating the commitment and motivation of employees for the successful implementation of the knowledge management system in an organization (Malhotra and Galletta, 2003). The authors present a theoretical framework for understanding how knowledge workers' commitment and motivation affect the use of the knowledge management system.

Peyman et al. (2005) acknowledge the causes of failure of KMSs, as cited by Malhotra (2000). They highlight that those KMSs fail for two broad reasons. (1) KMSs are often defined in terms of inputs, such as data, information technology and best practices. They note that these inputs by themselves may be inadequate for effective business performance. For these inputs to result in improved business performance, the influence of variables such as attention, motivation, commitment, creativity and innovation has to be better understood and accounted for in the design of the business model. (2) The efficacy of inputs and the way in which they are strategically deployed are important issues that are often left unquestioned as the expected performance outcomes are achieved. However, the value of such performance outcomes may be eroded by the dynamic shifts in the business and competitive environments. The authors cite Ambrosio's (2000) view that the most common error in implementing a knowledge management system is the failure to coordinate the roles played between information technology and human resources.

The authors refer to the IBM Institute for Knowledge-Based Organizations' roadblocks to successful implementation of knowledge management systems. The roadblocks identified are as follows: failure to align the knowledge management efforts with the organization's strategic objectives, the creation of repositories without addressing the need to manage the content, failure to understand and connect knowledge management to individuals' daily work activities, overemphasis on formal learning efforts as a mechanism for sharing knowledge and focusing knowledge management

efforts only within the organization boundaries. Based on these, they present the KMS implementation failure factors as a lack of familiarity of the top management with the dimensions of KM and its requirements, selecting an inexperienced person to lead the KM team, improper selection of knowledge team members, wrong planning and improper forecasting for the project, the lack of a separate budget for the knowledge management project, the organizational culture, the lack of support and commitment of the top management, resistance to change, the inability of the KM team to distinguish organizational relations and non-conformity between current and new systems.

According to Chong and Choi (2005), the success factors of implementing a KMS are the following: employee training, employee involvement, an open and trustworthy spirit of teamwork, employee empowerment, visible top management, the systems infrastructure, performance measurement, the knowledge structure and the elimination of organizational constraints. The critical success factors (CSFs) for implementing knowledge management systems in small and medium enterprises (SMEs) have not been systematically investigated (Chong and Choi, 2005). They present the factors for implementing KMSs in SMEs as follows: management leadership and support culture, IT, strategy and measurement, organizational infrastructure, process and activities, motivational aids, resources, training and education and HRM.

To address the failure factors in implementing KMSs, the KMS approach should be designed to support communities of practice, integrate humans, processes and technology, include collaboration with different stakeholders, identify an adequate level of specificity, receive strong support from the leaders of their target communities, be adopted by communities that encourage innovation, adopt representations with sets of specific fields, adopt technology only when it is suitable for a task, integrate it into the context of the target organizational processes, include methods to overcome impediments to knowledge transfer, incorporate means of enforcing managerial responsibilities, include verification methods and measures to promote collaboration, demonstrate how contributors can benefit from KM and allow for the measurement of

their effectiveness (Weber, 2007). This author acknowledges that KM approaches are at risk of failure from diverse sources, which may originate from the target community knowledge assets, technologies, people, processes and so on. The approach highlighted is geared towards preventing those failure factors.

The key factors for implementing KMSs are: strong belief of top managers in the knowledge vision, organizational and knowledge strategies, business process re-engineering, process-based organization with a horizontal structure, communication, a research centre, an action plan, sessions, meetings and seminars, knowledge committees, a reward system, a pilot programme, feedback and monitoring (Mostafa et al., 2007). The authors state that applying the listed factors in implementing KMSs in the aerospace industry has resulted in good, remarkable outcomes, especially in terms of cost and time reduction.

Xiong and Hepu's (2008) study on the impact of culture and knowledge sharing in Chinese joint ventures using a multi-case study approach concludes that effective communication, shared mindsets, training and leadership are the critical success factors for effective knowledge sharing. Albers (2009) recommends the following five steps to the successful implementation of KMSs: select the knowledge management team, establish the knowledge management strategy and business case, perform knowledge assessment and auditing, perform an information technology assessment and develop a project plan and measurement systems. He states that his contribution is based on practical experience gained from teaching, consulting and research in knowledge management.

This research work takes into consideration the challenges confronting the implementation of the current KMSs and the factors for successful implementation of KMSs. This review will guide in the development of the KMPOST framework.

2.9 Knowledge Management System Frameworks

There is a growing body of literature documenting the KMS frameworks, models, methodologies and projects being undertaken by organizations (Davenport et al., 1998; Leonard-Barton, 1995; Sveiby, 1997; Wenger and Snyder, 2000). In the studies that have been conducted, KMS frameworks have been proposed by different researchers based on their background and interest in the successful implementation of knowledge management practices. Furthermore, attempts have been made to review these frameworks so that a unified KMS framework can be adopted (Chang, 2005).

However, currently, none of the existing frameworks can provide a complete and generalized framework for designing a KMS by defining all the fundamental attributes of a KMS and their interrelationship.

To implement a KMS successfully, a KM framework is needed (Rusli et al., 2008). According to Jabareen (2009), a framework is a network, or “a plane”, of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena.

Seonwoo et al. (2006) define a framework for KM as the guidelines and directions necessary to set up a KMS. The importance of implementing a knowledge management framework for organizations is to provide guidelines for executing KM successfully, saving time and effort and avoiding inaccuracies.

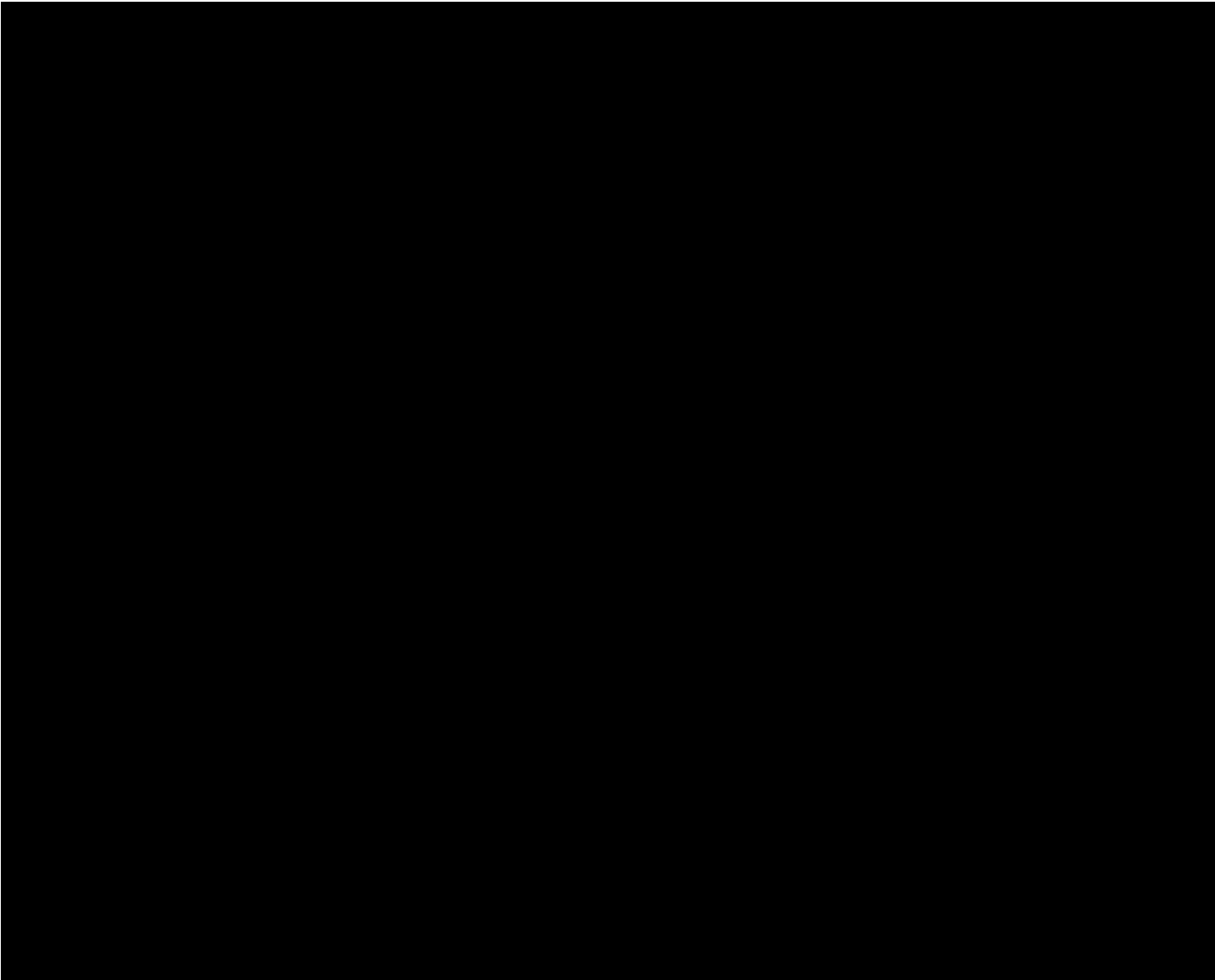
The aim of this section is to learn from these frameworks and use the observations and findings to develop the Knowledge Management Framework for the Postal Sector (KMPOST) that represents the focus of this research.

Gandong et al. (1999) present a knowledge management system framework called Active Design Support (ADS). It aims to provide product designers with critical design knowledge and guide them towards rational design decisions. They consider the design knowledge obtained by individual designers and experts as a valuable asset

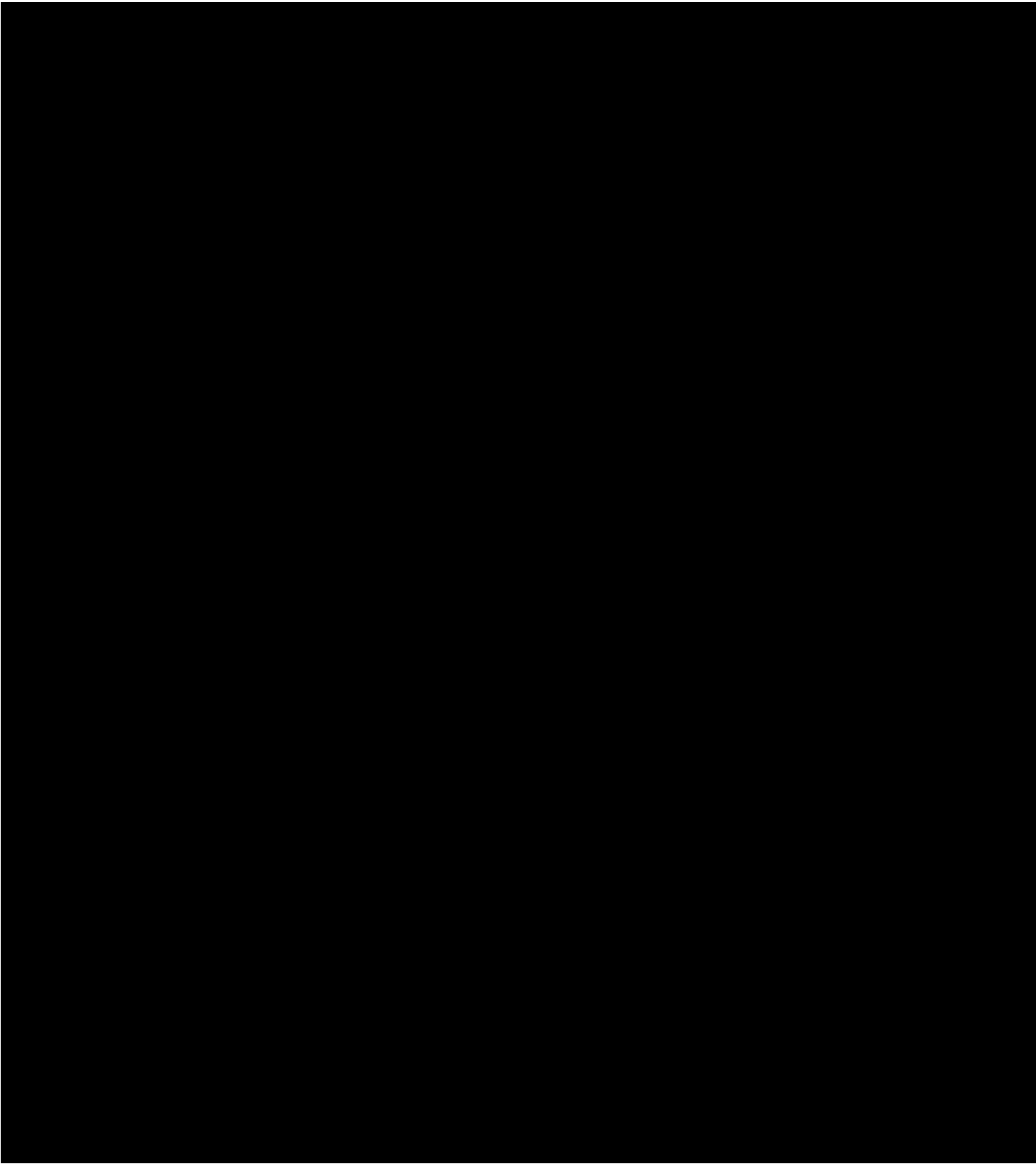
for enhancing the competitiveness of the products that a company designs and produces. They also note that only a few employees in most organizations have the essential know-how, while other workers spend much of their time looking for the needed information and knowledge.

They view a KMS as a tool for managing knowledge by using a computer system to capture the accumulated know-how and make it available to others. They state that an efficient KMS should not be flooded with irrelevant information; rather, it should actively provide a user with only the critical information that is necessary and useful for fulfilling the designed task. In other words, the essence of an effective KMS is a representation of both the content and the context of information that is actionable. They present a KMS framework for Active Design Support with two key components: information modelling and system architecture.

They conclude that the ADS framework (see figure 2.7) aims to enhance and promote knowledge sharing among designers. However, their framework does not stress the importance of collaboration and it undermines the issue of copyright law concerning product and service development.



According to Malhotra (2000), the changing business environment is characterized by dynamically discontinuous changes, which require a reconceptualization of knowledge management. This reconceptualization focuses on how people in organizations actually approach the acquisition, sharing and creation of knowledge. The author proposes a framework (see figure 2.8) for a KMS based on Churchman's (1971), which explicitly recognizes that knowledge resides in the user and not in the collection of information.

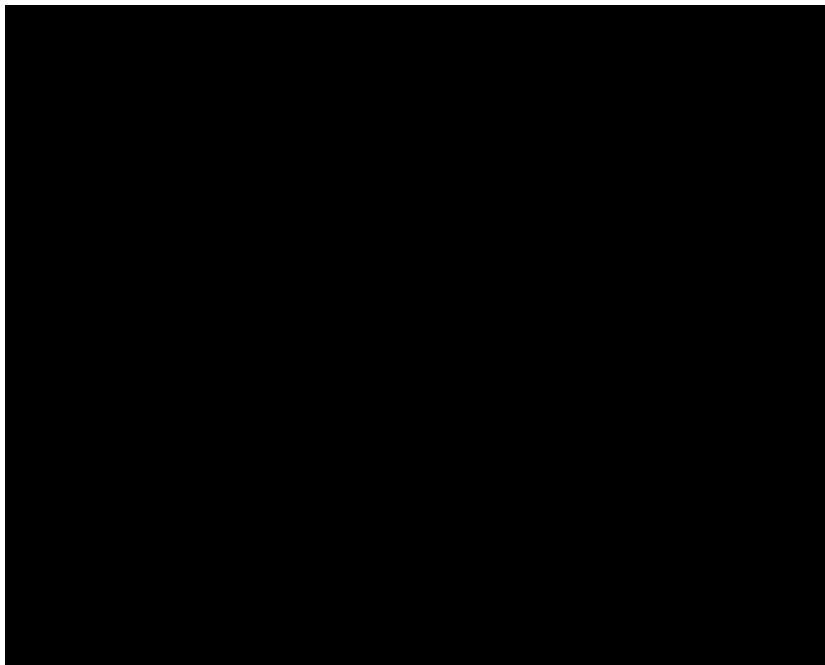


Furthermore, the author states that the human aspect of knowledge creation and knowledge renewal cannot be replaced by knowledge management technologies, especially in the following areas: the imagination and creativity latent in human minds,

tacit dimensions of knowledge creation, the subjective of knowledge and constructive aspects of knowledge creation and renewal.

The subjective paradigm assumes the existence of only a few rules, specific information and a lot of freedom for users to use their good judgement in all situations based on the available information. Despite the fact that the framework acknowledges the human factor and the subjective nature of knowledge in a dynamic business environment, it fails to address the cultural issues that need to be considered when migrating from the traditional to the sense-making approach.

Cuel (2003) presents a KMS framework called Distributed Knowledge Management (DKM) as depicted in figure 2.9. The author notes that the common outcome of the traditional KMS is the creation of an enterprise knowledge portal (EKP). This is a web-based interface that provides a common access point to corporate knowledge. The author observes that the underlying representation of the EKP is typically unique, and it is meant to represent a common and shared conceptualization of corporate knowledge that enables communication and knowledge sharing across the entire organization.

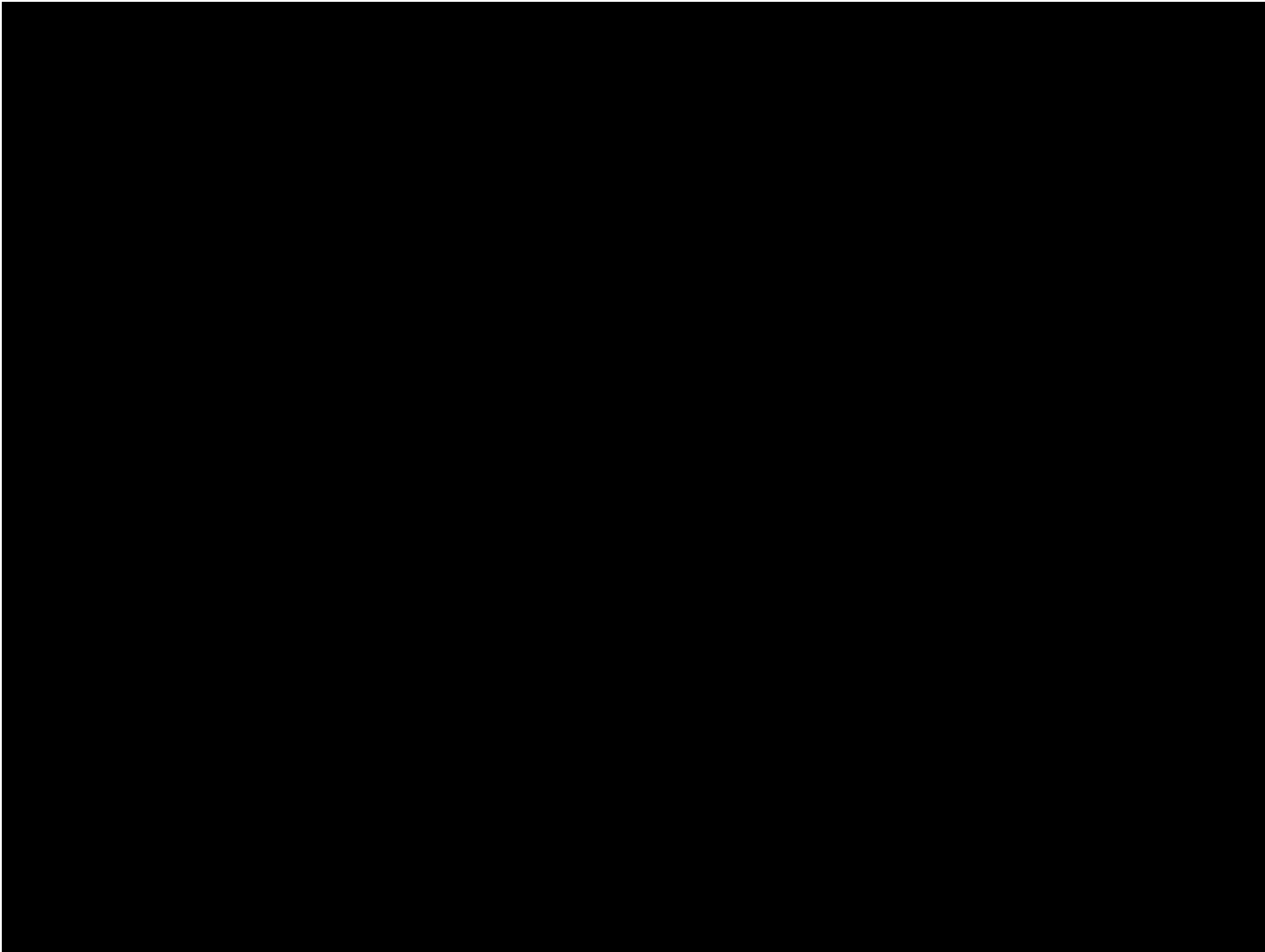


The concept of DKM is based on two principles: (1) the principle of autonomy, which grants organizational units a high degree of semantic autonomy in managing their local knowledge, and (2) the principle of coordination, which allows each organizational unit to exchange knowledge with other units through processes of double-loop learning. DKM aims to sustain the creation and management of the different conceptual schemes that coexist within a KMS. In the DKM system, each organizational unit, either formal or informal, must be represented by a knowledge mode (KN), and each KN should have a knowledge owner.

The author states that the current approaches to the KMS framework explain why people are led to abandon KMSs. He presents a framework that recognizes the importance of knowledge nodes in designing KMSs. However, the author fails to explain how to manage the interaction between KNs effectively for knowledge sharing.

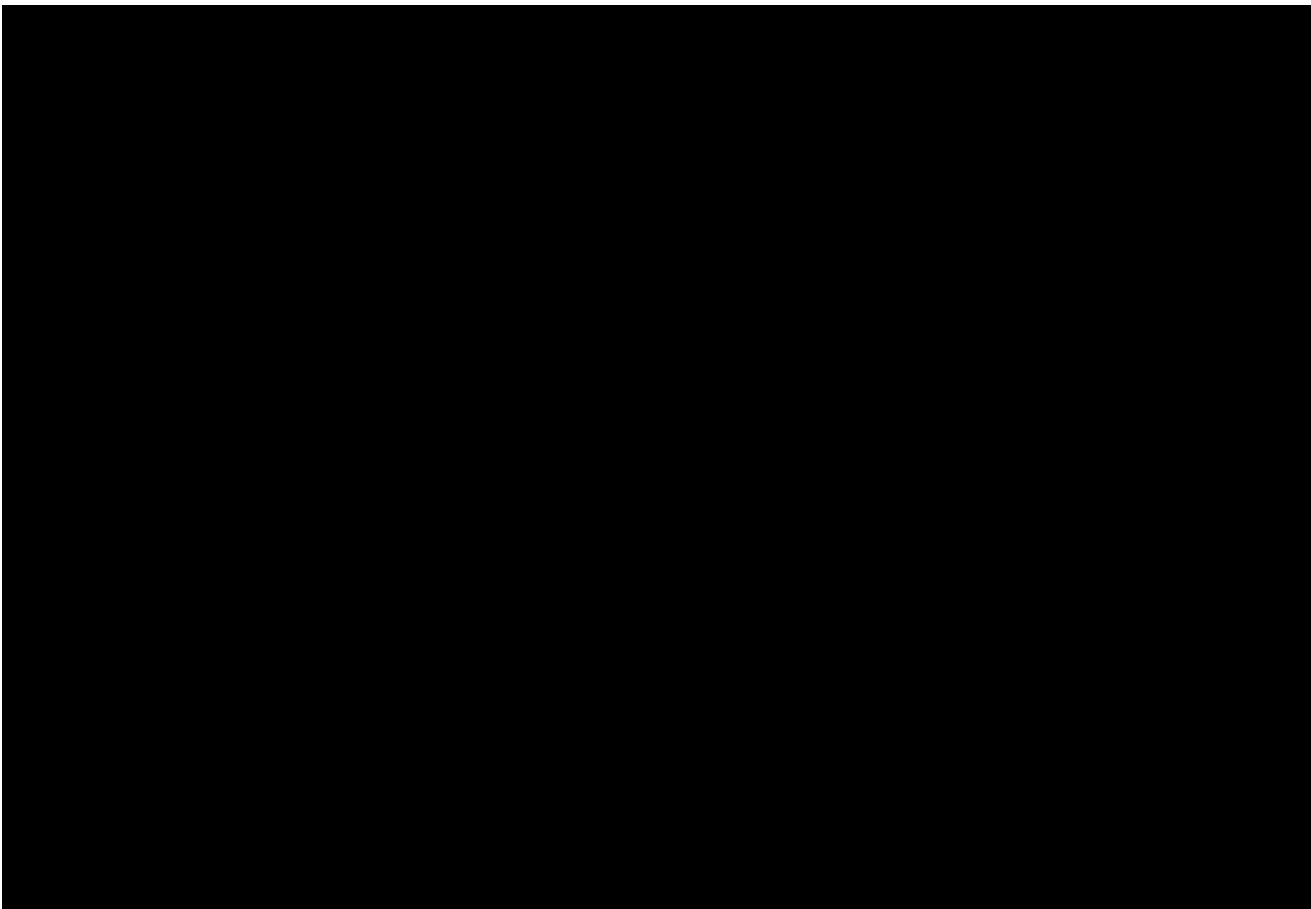
Rusli et al. (2005) propose a KMS implementation framework in a collaborative environment in higher learning institutions. They note that researchers have proposed several KMS frameworks. Many of these frameworks are prescriptive, providing a direction on the type of KM procedures without providing specific details on how these procedures should be accomplished. Based on their research work, they state that people mostly concentrate on the KMS infrastructure and technology and neglect other very important issues of KMSs, such as human aspects.

They propose a KMS framework (see figure 2.10) that consists of five components: functionality and system architecture as the backbone to support the KMS, psychological and cultural aspects, knowledge strategies, measurement and system auditing.



The proposed KMS framework addresses both the technological and the human aspects of KMSs. However, key issues like leadership and communities of practice are missing from the framework design, despite being very fundamental elements in the success of KMS implementation in a collaborative environment.

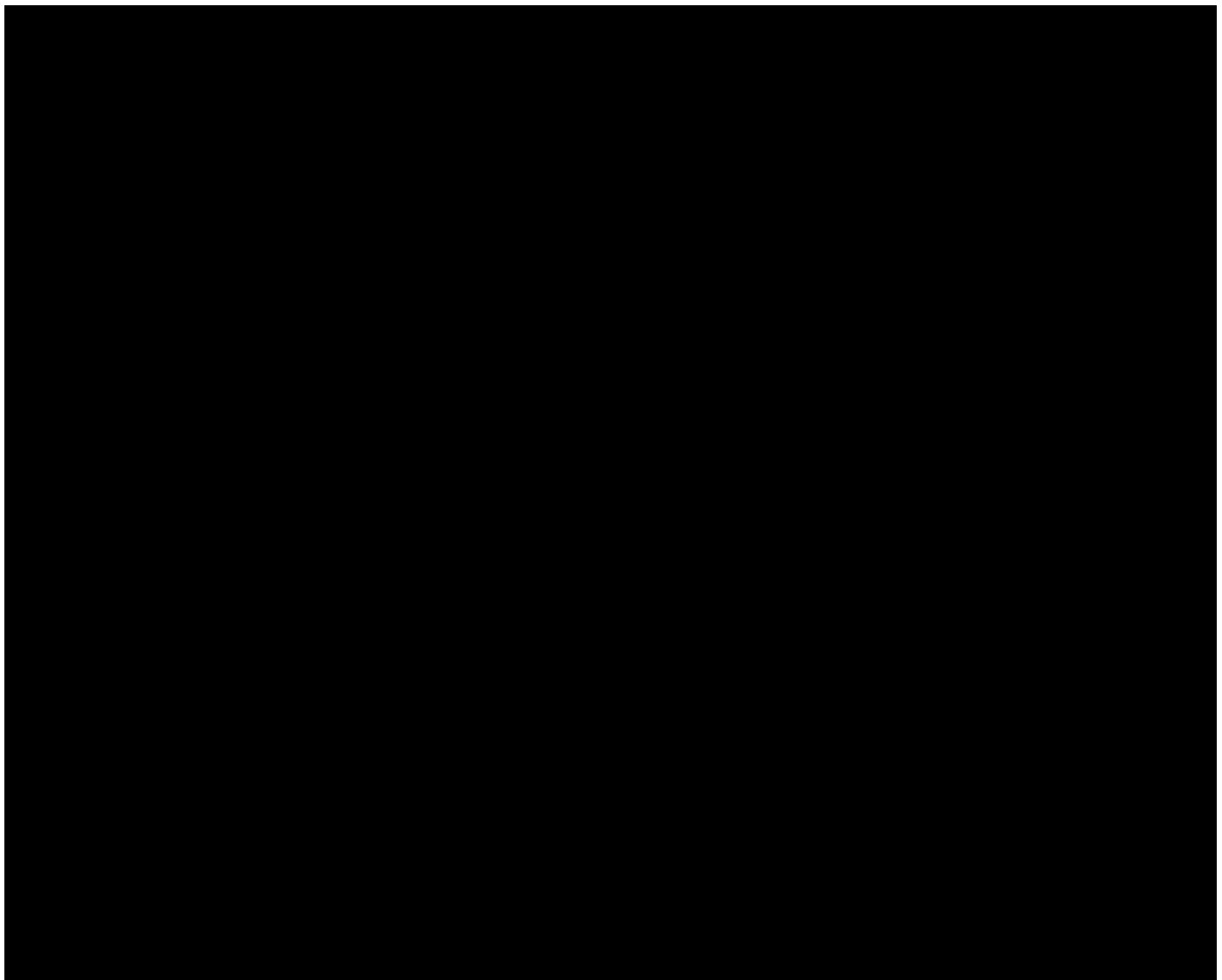
In another development, Rusli et al. (2006) state that a knowledge management system is one of the most critical weapons to transform knowledge resources into intellectual capital for competitive advantage in organizations.

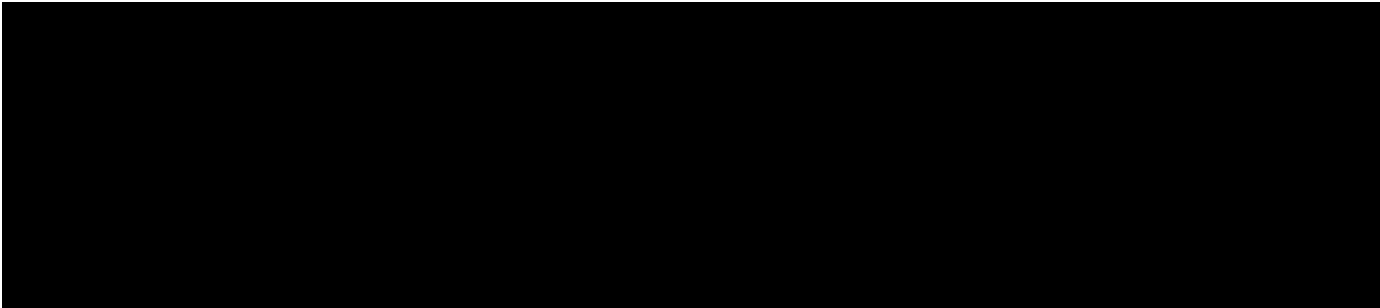


They note that most learning organizations (LOs) still have difficulties in identifying the appropriate KMS architectural framework and KMS technologies suitable for their organization. They further state that there is no clear mechanism for motivating and encouraging a community of practice (COP) to share and reuse knowledge or to generate new knowledge in a collaborative environment. To overcome these problems, they present the critical factors that need to be considered in a KMS framework. These include pull and push technology, notification technology, knowledge discovery technology, knowledge documentation, knowledge quality and productivity and human–computer interface technology. They consider the following as basic requirements for a KMS: measurement, time and cost, security elements, easy access to knowledge resources, documentation quality and productivity of services. They propose a KMS model and architecture for learning organizations named AFTPCAS (see figure 2.11), which consists of six main components to serve the community with a collaborative environment in which to work together to achieve the desired organizational objectives. These components consist of architecture,

functionality and application, taxonomy and process, culture, psychological and audit. The so-called AFTPCAS model is identified as a KMS architectural framework for a collaborative environment in LOs. This KMS framework is found to enable people to share their knowledge in an LO. However, it fails to consider the dynamism of the learning environment, the information flow and the issue of the context of the information shared between users of the KMS.

According to Hsia et al. (2006), utilizing a KMS to manage medical information and health care knowledge has become an important issue for nursing professionals. They note that very little is actually known about how to integrate technologies and knowledge management (KM) activities effectively to facilitate nursing practices. They present a conceptual framework that integrates nursing processes, KM activities and enabling information technology (IT) in the design of a nursing KMS.





They consider a nursing KMS as an IT-based system developed to enhance knowledge creation, co-codification, transfer and application to support nursing processes. They identify a set of KM technical functions that are necessary for a nursing KMS and varieties of enabling IT that can be used to support nursing practices and KM activities. They argue that the nursing KMS designs (see table 2.1) should include both nursing processes and KM technologies. The nursing process side should consist of five basic practices: assessment, nursing diagnosis, plan, implementation and evaluation. The KM technologies side should consist of seven basic functions: presentation, personalization, collaboration, process, distribution, integration and search functions.

The authors claim that their research work makes a two fold contribution: (1) the framework provides a systematic guideline to adopt the enabling IT and KM functions to support the activities in nursing processes; (2) it helps healthcare administrators and professionals to evaluate the potential of enabling IT to re-engineer nursing processes and associated activities. According to the authors, this framework contributes to the development of KMSs for nursing professionals. However, it is a conceptual framework that has not been validated.

According to Mohd et al. (2006), there are gaps between theory and practice in the current KMS frameworks. The authors used the Shell IT International (SITI) knowledge management system framework as a case study. SITI is an IT organization for the Shell Group of Companies. SITI's KM framework was developed for staff handling first- and second-level support. The officers use the KM facility to obtain or maintain information about their specific department and make it readily available to support staff and customers alike. The researchers identify eight activities

involved in managing the knowledge of an organization. The activities are as follows: initiation, production, modelling, repository, distribution and transfer, technology infrastructure, application and retrospect. Based on their findings, they introduce the notion of system thinking, stating that system thinking is important to KM because it considers the entire organizational knowledge processes. It facilitates the linkage between the KM initiatives and the strategic goals of an organization.

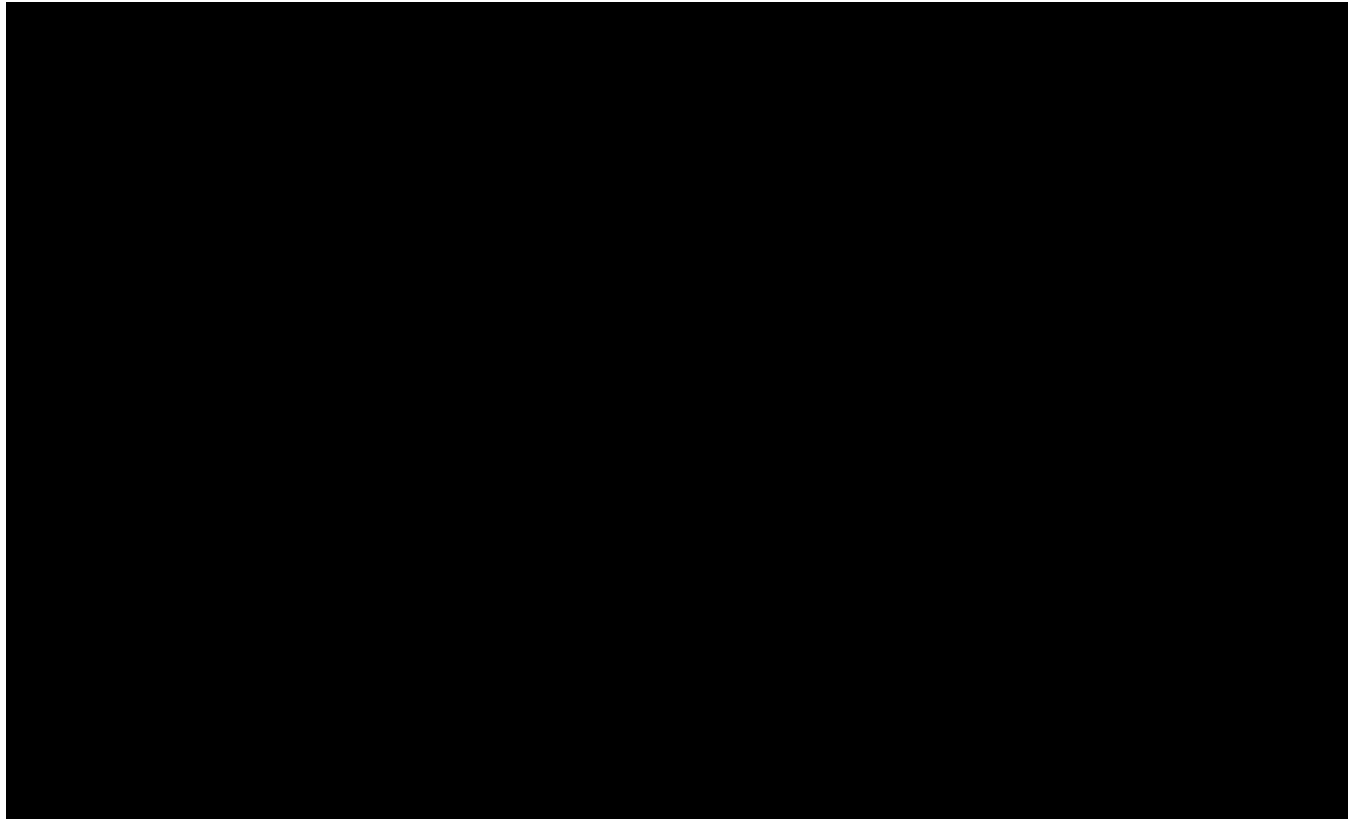


Table 2.2 Detailed procedure of the alternative framework

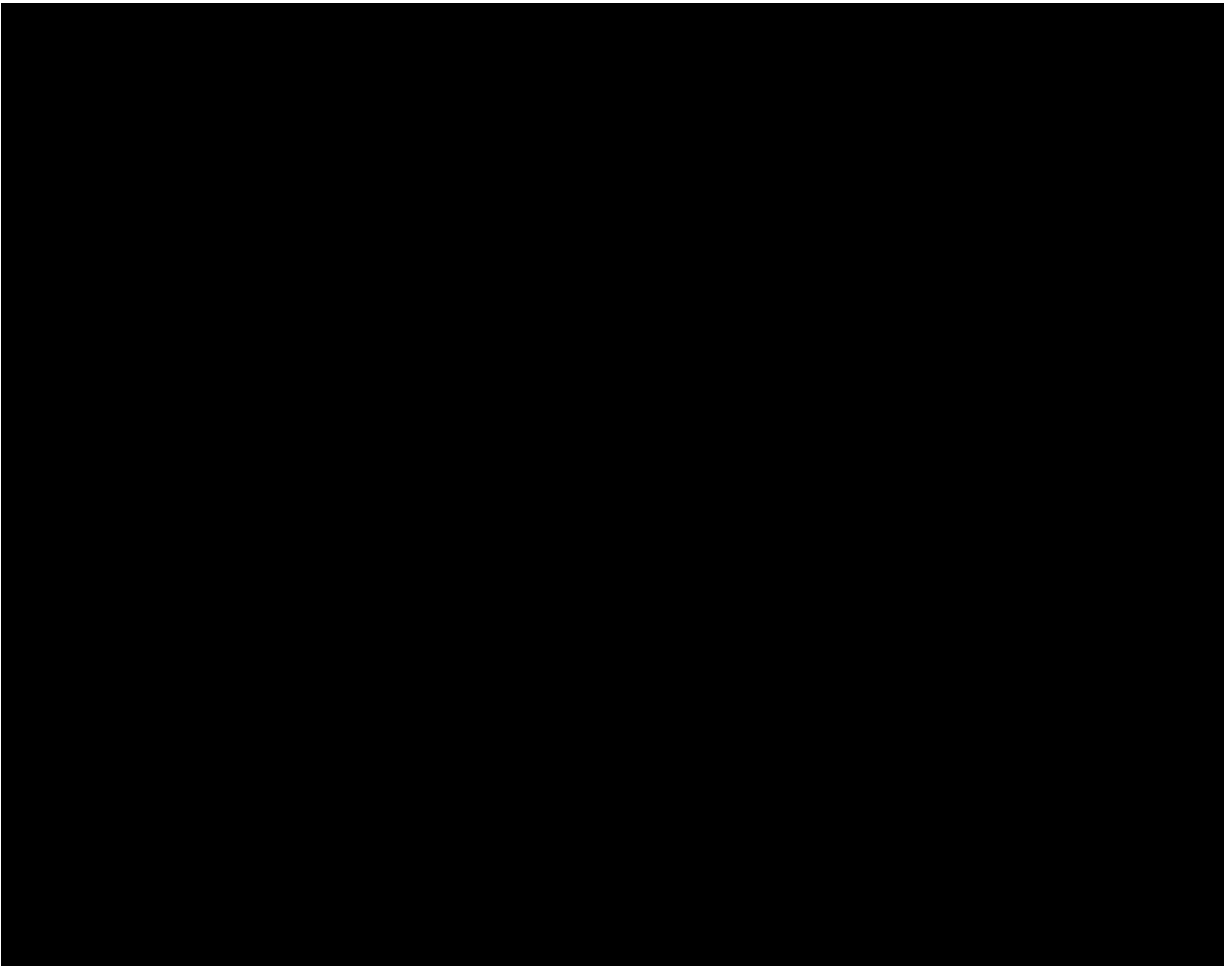
Phase	Procedures	Outputs
Strategize	<ul style="list-style-type: none"> • Perform strategic planning • Determine the key knowledge requirements and set KM priorities 	<ul style="list-style-type: none"> • Review the current IT infrastructure and document metrics for measuring the success of the KM procedure
Model	<ul style="list-style-type: none"> • Conduct a knowledge audit, determine competencies and weaknesses • Define KM initiatives 	<ul style="list-style-type: none"> • Status of knowledge in the organization • Knowledge management programme plan
Use	<ul style="list-style-type: none"> • Capture and secure knowledge based on 	<ul style="list-style-type: none"> • Knowledge acquisition documents

	<ul style="list-style-type: none"> • realcases in theindustry • Review theknowledge andintegrate it into theknowledge base • Sharing anddistribution ofknowledge 	<ul style="list-style-type: none"> • Success rate of thesolutions used in real-world cases
Revise	<ul style="list-style-type: none"> • Conducta knowledgereview; validityand accuracy • Perform qualitycontrol, reusabilityof thesolutions in thenew systems • Update the existingknowledge base 	<ul style="list-style-type: none"> • Solutions that areobsolete will be retired • Recommendations ofupdates from variousteams
Transfer	<ul style="list-style-type: none"> • Create integratedknowledgetran sfer programmes • Use knowledge tocreate value forthe enterprise • Feedback receivedfrom varioussources will bedocumented 	<ul style="list-style-type: none"> • Lesson learneddocuments based on bestpractices or worstpractices will bedisseminated throughoutthe organization

The authors present an alternative framework (see figure 2.12) that addresses all of the processes needed for SITi's internal and external knowledge management usage and development. The framework allows queries and receives feedback from various departments in the organization. The features of the proposed framework are strategic, model, use, review, transfer and technology infrastructure. However, the framework does not provide a methodology for its implementation. Furthermore, the research is based on a single entity and so cannot be generalized.

Mostafa et al. (2007) explore the use of integrated KMSs in the aerospace industry, which they considered to be high-technology knowledge-based organizations in most countries. They consider some challenges in the aerospace industry that are directly related to KM dimensions. These challenges are: a distributed workforce, an aging workforce, the cost of longer learning time and disasters.

They present an integrated KMS framework (see figure 2.13) that consists of three main layers.



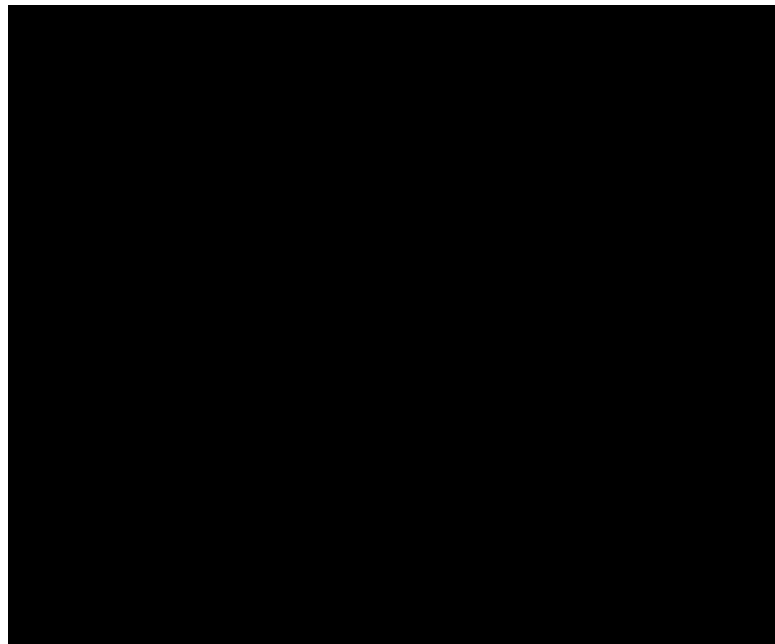
The interior layer is the knowledge architecture, which is considered as the KM backbone. The authors define knowledge architecture as a logical set of principles and standards that guide the engineering (high-level) design, selection, construction, implementation and management of an organization's KMS infrastructure. Other factors considered in the interior layer are the knowledge strategy, knowledge capture, knowledge storage and knowledge sharing.

The middle layer consists of the factors considered necessary for the successful implementation of a KMS. These factors are business process re-engineering, a reward and promotion system and pilot, technology, training and education programmes. The outer layer includes the factors that are classified as general in comparison with the outer factors. These factors are the organizational culture, transparency, management support, commitment and trust.

The authors explain the methodologies for the framework, which takes into account both the technological and the human aspects. The framework presents a holistic approach to KMSs, but does not say anything about data management or the cost-effectiveness of the KMS framework.

Normal and Ishak (2007) identify the KM problems in a water utility company in Johor. First, the company enjoys a monopoly and lacks market forces for competition. That is, the company is unable to operate with the degree of efficiency required. Second, a substantial number of technical personnel are approaching retirement age. Therefore, in a short period of time, there is the possibility of knowledge loss across the structure of the organization. This may result in a loss of revenue and low staff productivity in the organization.

The authors propose a framework aiming to design an optimum KMS that is capable of storing tacit knowledge that can be captured in a knowledge capsule system.



The proposed KMS framework (see figure 2.14) allows tacit knowledge to be inputted by subject matter experts. The proposed framework draws its strength from the passive components (a dynamic management portal), which are connected to knowledge capsules (KCs), and the active components (a call centre to subject matter experts). This creates an environment that can be shared by the community of practice, regardless of geographical location, using an intranet or the Internet. The

tacit knowledge captured is vetted by subject matter experts and steering committees before it is stored in the system. Although the framework incorporates adequate measures to ensure that the content of information is vetted, the issue of the context of information is not mentioned.

Nevo and Chan (2007) note that many KMS research works overlook some important foundations of KMI, such as the law (knowledge privacy and protection), politics (knowledge control and dominance) and marketing (persuasion and knowledge asymmetries). They also highlight that KMS research seldom considers the “dark side” and how it can be used to suppress or distort knowledge to serve a specific agenda. Their studies reveal the most desirable capabilities of KMS as adaptability, cost-effectiveness, ease of access, ease of use, search and retrieval, security, knowledge creation, content management, quality assurance, collaboration, multimedia, report generation, central repository, push strategy, customizability and incentive.

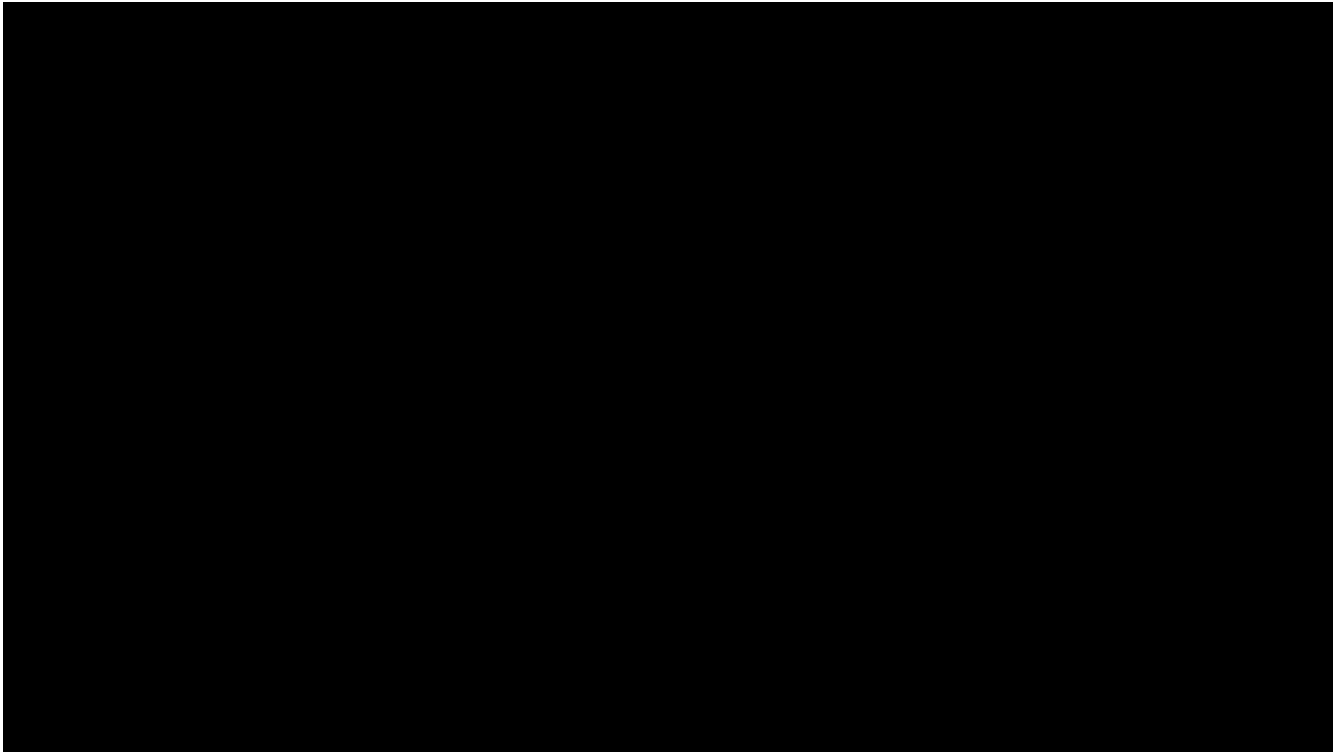
These studies focus on integrating KMSs with existing technologies and organizational objectives. The KMS framework presented seems to be comprehensive; it is approached from a holistic perspective. However, the framework fails to consider learning as a key element of a KMS.

According to Rusli et al. (2008), knowledge is everywhere. How far the knowledge has been captured, collaborated and managed systematically, especially in public higher learning institutions (PHLI), is unknown. Furthermore, how students benefit from KMSs in PHLIs is something that has not yet been revealed. According to them, there are six important components that could be brought together in designing an efficient framework for KMSs: KMS architecture, KMS application and its functionality, KMS taxonomy and process, KMS psychological aspects, KMS socialculture and KMS audit.

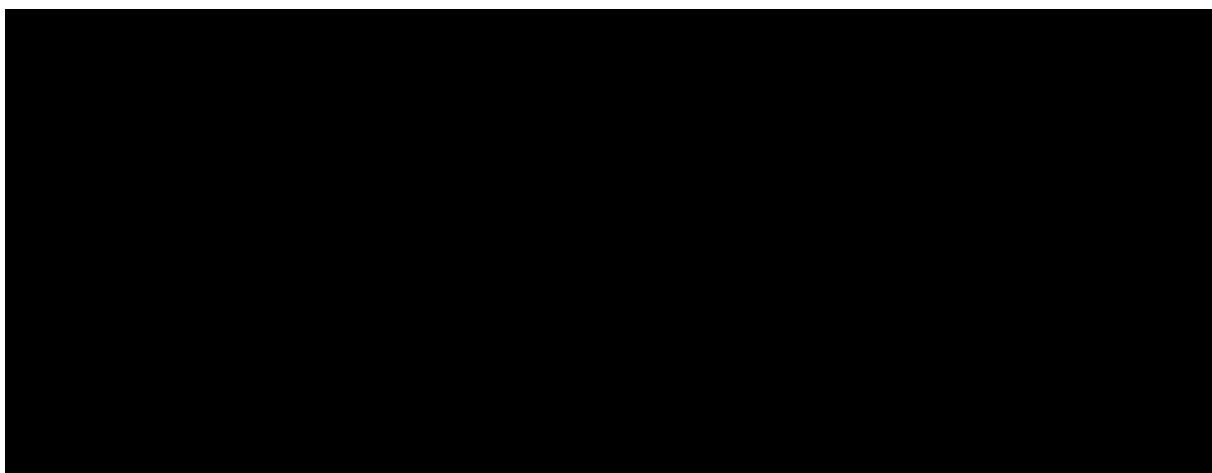
The authors adopt Rusli et al.'s (2005) KMS framework as a baseline for their research on the general perception and acceptability of the current KMS implementation in six selected public higher learning institutions in Malaysia. In their

research, six elements are identified as causes of unsuccessful implementation of KMSs in these institutions. These elements are lack of awareness of KMS implementation, unutilized technical components, application and systems, ignorance of advanced technology, cost of KMS implementation, lack of incentives and rewards and lack of consideration of KMS auditing.

The authors are of the view that all the identified problems can be solved by successfully creating adequate awareness of KMSs in institutions. This awareness can be created in two main areas, namely broadcasting and training and learning. Therefore, the KMS framework of Rusli et al. (2005) is modified. KMS awareness is made a separate component of the KMS framework, rather than following Rusli et al. (2005), who consider awareness as part of the KMS psychological component. In addition, the research indicates that the KMS audit is given less attention in KMS implementation. They suggest that there should be clear interaction between KMS awareness and KMS audit. This can be achieved by implementing an audit feedback mechanism. They also state that in implementing the KMS framework, the issue of incentives and rewards must be considered, but they neglect the issue of culture as it relates to the individual and to the organization.



Weber and Gunawardena (2008) observe that the most discussed categories of KMSs are repository-based and expert locations. Repository-based KMSs are typically adopted to support knowledge sharing based on an organized and updated database of explicit knowledge. Expert locator KMS (see figure 2.16) are systems that link users with expert databases that store data on experts with their skills and competencies.



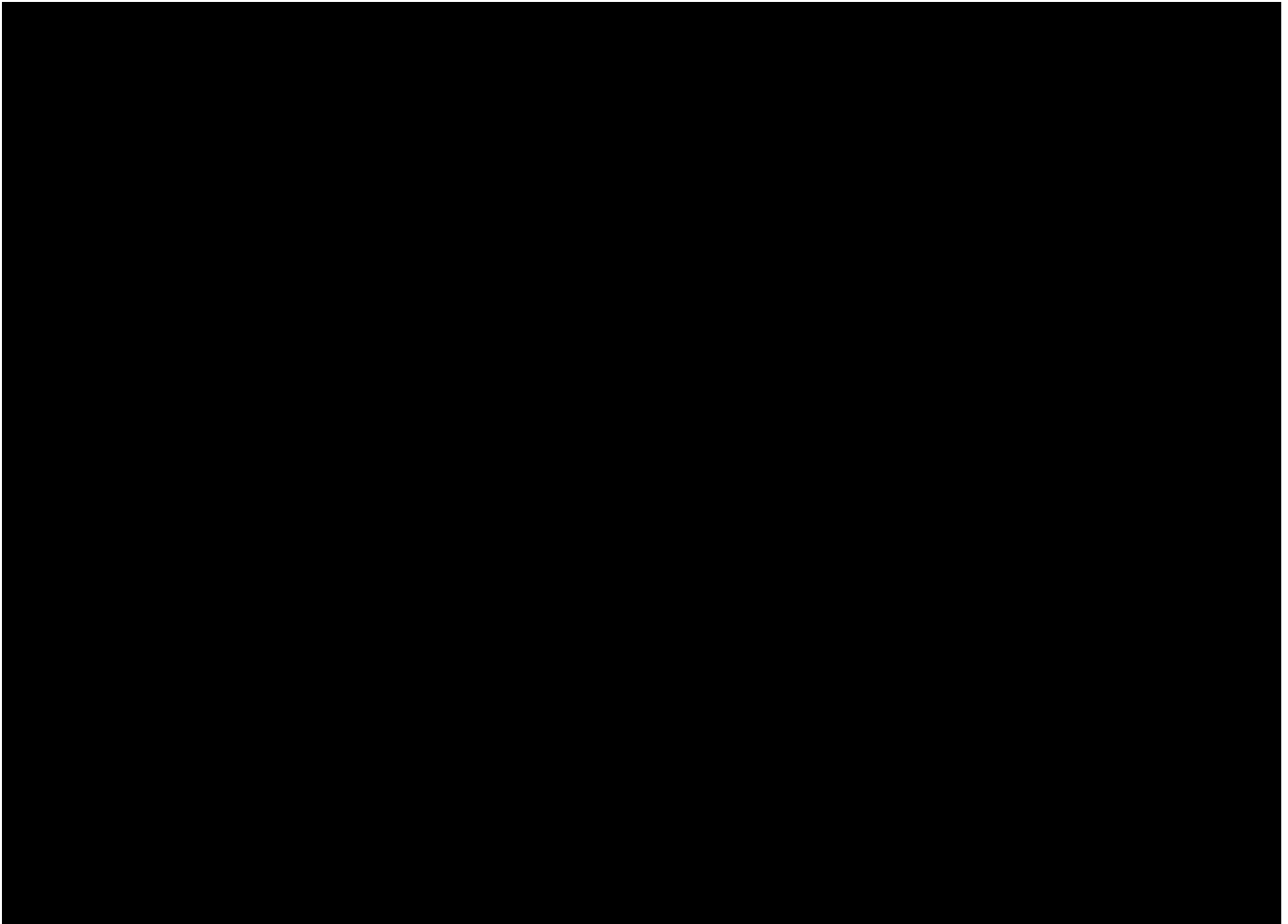
They note that, despite the fact that both the repository-based and the expert locator are important, organizations implement them separately with different systems. They propose a multifunctional framework with a single architecture that performs the role

of both systems, that is, a multifunctional framework for designing a KMS that adopts a single architecture and performs KM functions that originally required multiple architectures. The architecture is built on two databases, one on structured knowledge artefacts and the other on experts, in which each artifact is associated with the experts. The principles guarding the framework are highlighted as collaboration, transparency, justification, absorbency, technology and verification.

The authors recommend that knowledge artefacts should be short and focused to allow transparency and decisionmaking to solve problems. They also recommend that in designing the KMS, there should be adequate infrastructure for its verification, validation and reuse. Those knowledge facilitators are available to review knowledge artefacts and effectively guide contributors. The framework focuses more on the technical aspects of designing a KMS. It does not address ease of use or the user-friendliness of its application. Secondly, the proposed framework is not evaluated.

According to Smuts et al. (2009), the implementation of KMS software tools that are integrated with organizational processes assists organization in converting knowledge into actionable information. They observe that numerous approaches to KM have been developed, without a universally accepted framework or methodology for the implementation of KMS solutions. The authors apply a 12-step approach to the implementation of KMSs developed by Calabrese and Orlando (2006) as a proof of concept with one of the major mobile telecommunication operators in South Africa.

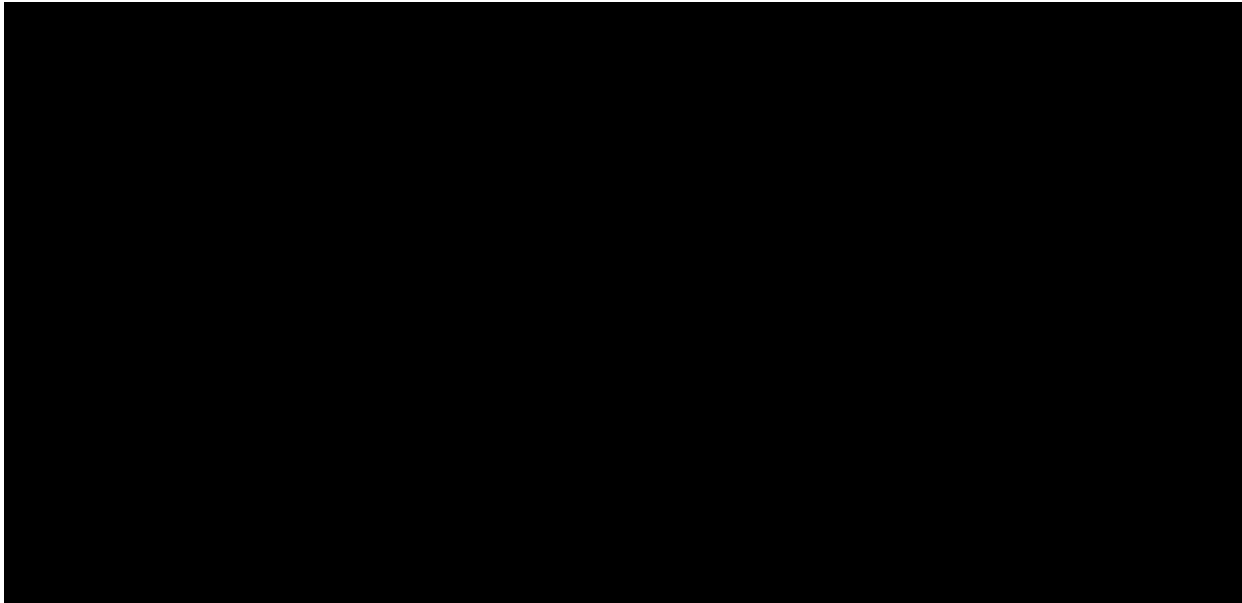
In implementing the approach in practice, they find that it is not comprehensive enough and lacking in implementation details. Therefore, the authors propose an enhanced framework and methodology for KMS implementation (see figure 2.17). In developing the proposed framework and methodology, the authors take into consideration Rubenstein-Montano et al.'s (2001) recommendations regarding the development of a KM framework.



The proposed framework consists of five phases, namely strategizing, evaluation, development, validation and implementation. Each phase of the framework consists of a sub-phase describing the methodology applicable to the phase. The proposed methodology describes the procedure and steps to be followed and is aligned with the proposed framework. The authors claim that the outcomes of the proposed framework have been achieved successfully. However, the proof of concept is carried out on a single organization. Generalization and validation of the framework across multiple organizations are therefore desirable to ascertain the comprehensiveness of the framework and methodology.

According to Parag (2009), many of the past frameworks do not take into account the importance of human aspects in knowledge management. He suggests a new framework (see figure 2.18) that emphasizes the provision of training to employees and the provision of incentives and rewards to employees to encourage the sharing of tacit knowledge. The major constituents of the framework are rewards, technology,

culture, training, learning, strategy, structure, system, leadership, personality and attitude. He claims that the proposed framework provides a holistic view of KM implementation that earlier frameworks ignore.



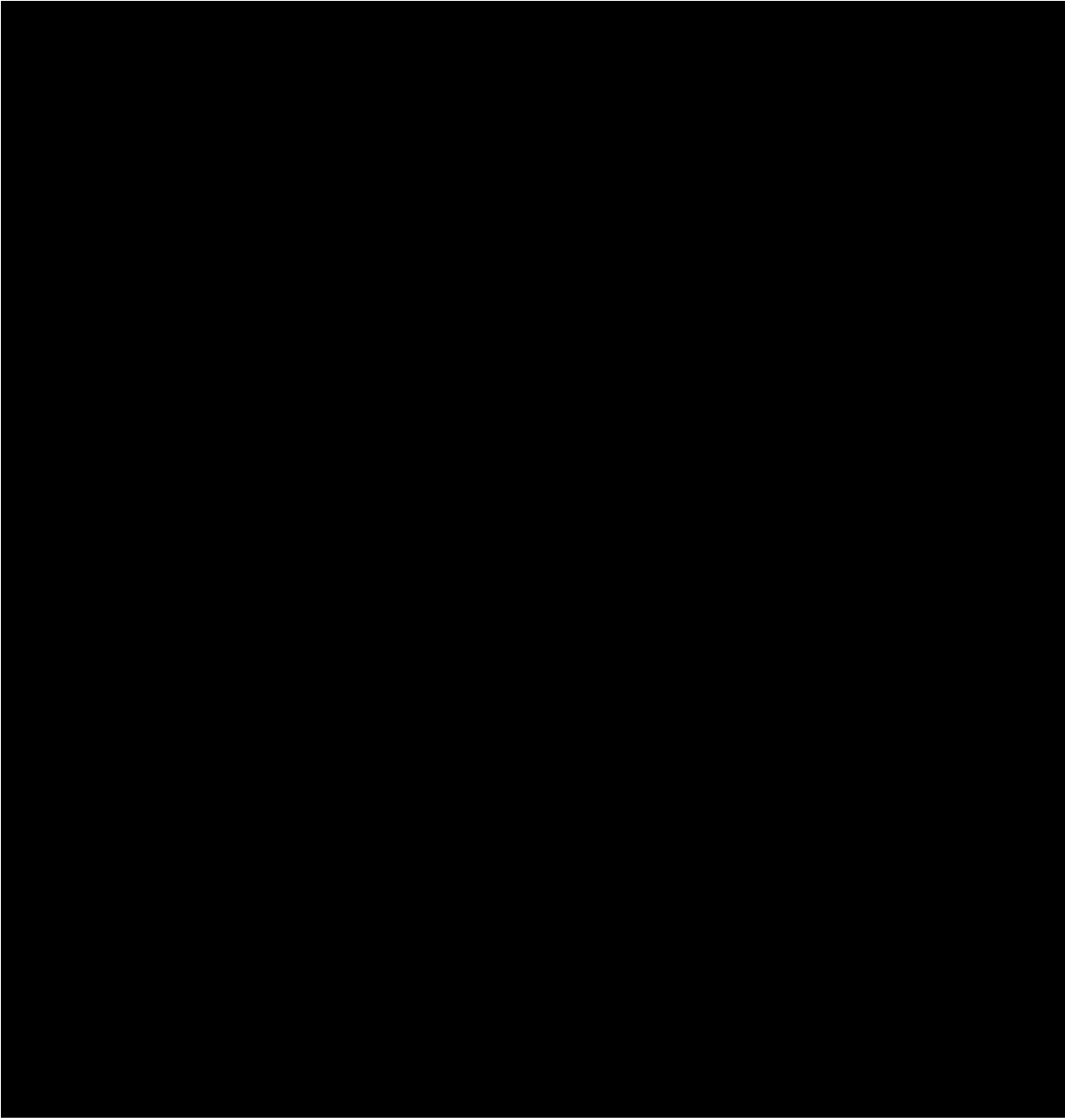
Though the proposed KMS framework is based on a practical survey in an Indian organization, there is no evidence of validation of this model in different environments or through other case studies.

Stafford (2009) acknowledges that today's global managers are facing unprecedented challenges outside their organizations. These challenges are fuelled by environmental factors of change, such as globalization, emerging technologies, emerging best business practices, government regulations, competitive global financial markets, the limited availability of knowledge workers and higher worker turnover rates. He also notes that the rapid increases in the development of emerging technologies have forced many managers and executives to reinvent their decision-making methodologies.

The author states that the current KMSs may have outlived their usefulness due to the rapid rate of change in technological and economic forces occurring in the global economy. He outlines the reasons for the failure of KMSs as follows: poor connectivity to other information systems, lack of updates, not web-enabled (XML) for 24/7

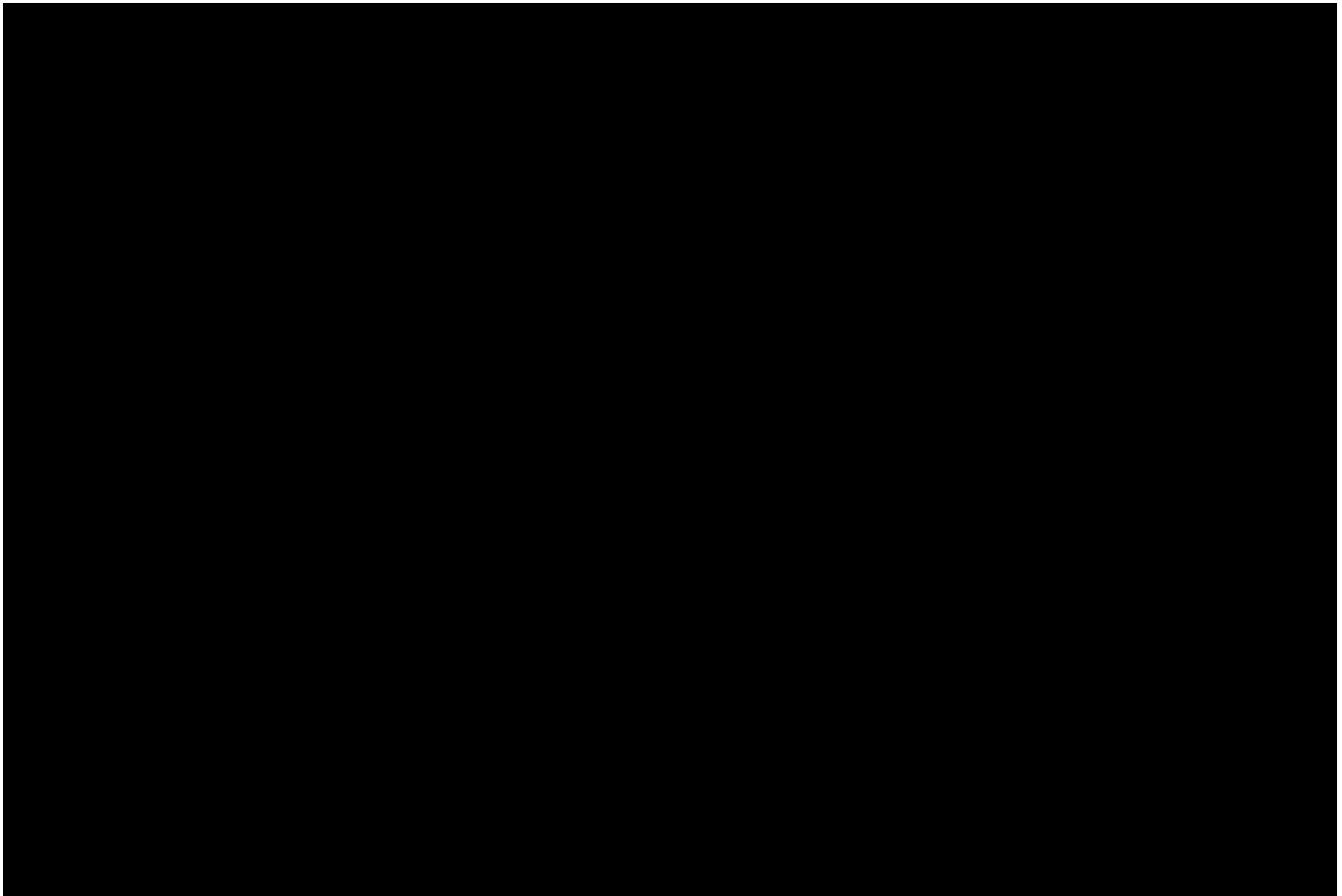
access, lack of validated data and information during the acquisition phase, poor content management, inadequate document management, control policies, minimal integration of end-users' suggestions for improvement and lack of employee ownership.

The author shares the view that new KMSs must be web-centric and integrated into the organization's major information systems, thereby allowing the global managers 24/7 access. He suggests that emerging KMSs should include encryption tools, client/server applications, new ultra-high-speed Internet, emerging technologies, mobile devices, government regulations and guidelines, a financial information system, an accounting information system, best business practices, ethical practices and legal guidelines.



The proposed KMS framework (see figure 2.19) will allow knowledge workers to collaborate remotely on projects via high-speed Internet bandwidth and web-based tools and applications. However, the author fails to take into consideration the cost implication of implementing such KMS frameworks and the availability of a reliable network, especially in developing countries.

Sajeva (2010) defines a socio-technical knowledge management system as a set of technological and social elements that ensure the development of the knowledge management process and the creation of an appropriate organizational knowledge management system. She presents a knowledge management system framework (see figure 2.20) with three main sub-systems, namely knowledge management, technological context and social context.



According to the author, in designing the KM framework of an organization, the following key processes should be established: knowledge identification, knowledge acquisition, knowledge creation, knowledge storage, knowledge dissemination and knowledge application. The author further explains the five major elements of socio-technical environments: strategic leadership, organizational infrastructure, technological infrastructure, organizational learning and knowledge culture.

For the purpose of this research, KMS framework is viewed as a collection of interrelated attributes or factors that provide a comprehensive system that facilitates

the practice of knowledge management among employees within and outside the organization to identify, capture, store, share and apply organizational knowledge resources to achieve organizational objectives.

2.10 Discussion

In the literature review, the KM frameworks discussed describes components and influence factors of knowledge management, it identifies the key aspects for designing knowledge management processes and systems. These frameworks provide guides for KM development processes and success factors to KM decision makers and implementers as well as a reference for researchers.

Most of the KM frameworks discussed in this chapter describe or prescribe how organizations manage their knowledge. However, no two frameworks have exactly the same attributes or the same framework structure. There are some attributes or factors that are common to all the frameworks, while some attributes are peculiar to certain frameworks.

The KM frameworks do not fully address KM comprehensively to take care of all organizational KM requirements, but each of them addresses specific aspects of KM elements. In general, the following aspects are identified as critical success factors: 1.) human factors (culture, people, learning, etc), 2) organization (vision, processes, structure, strategy, etc), 3) technology (infrastructure and applications) and 4) knowledge (functionalities and tasks).

The review of the different frameworks revealed the following: (1) a lack of comprehensiveness: none of the frameworks comprise all the key factors and attributes for knowledge management implementation; and (2) an imbalanced approach: even though these frameworks are considered to be developed from an social-technical perspective, some tend to place more emphasis on some factors than others.

The review revealed the strengths and weaknesses of these frameworks, consequently, more work needs to be carried out to enrich future KM frameworks.

This study attempts to address the limitations of the existing frameworks by synthesis of the KM frameworks to identify the commonalities and shortcomings.

Five KM frameworks are selected from the reviewed frameworks for further analysis and as a benchmark for the development of the Knowledge Management Framework for the Postal Sector (KMPOST). The selected frameworks are: Mostafa et al. (2007), Parag (2009), Rusli et al. (2008), Sajeve (2010) and Smuts et al. (2009).

By combining and aggregating the attributes of these KM frameworks, this research presents a new KM framework which is believed to be more comprehensive. This would properly address the problem of the lack of comprehensiveness and the imbalanced structure of the existing KM frameworks.

2.11 Summary

Knowledge management was introduced in this chapter in its broad sense by providing an overview of its terms and concepts. In addition, the research examined some of the theories that lie behind the sources of knowledge and the need for knowledge management in today's organizations. This chapter studied the different definitions of KMSs and identified the critical success factors for KMS implementation and the benefits associated with them.

The chapter reviewed knowledge management system frameworks. The study showed that each framework was developed to address the knowledge management needs of an organization or industry. It was also observed that the knowledge management implementation focus and processes differ from organization to organization. Therefore, there is no "one fit solution" for all organizations, since each organization implements a knowledge management system as a response to its particular organizational context.

CHAPTER THREE

Critical Factors for KM Frameworks

3.1 Introduction

The aim of this chapter is to identify the critical issues, factors and attributes considered in KM frameworks, in order to gather positive experiences before constructing a new framework. This is achieved through comprehensive analysis of five selected frameworks and literature review carried out. A study of UPU's postal strategy plans from 2009 to 2016 was carried out to gain better understanding of the knowledge management issues and to identify factors that will adequately addresses the KM needs of the postal sector.

A study of KM practice in the Nigerian Postal Service was carried out to understand the current processes and challenges of KM implementation in NIPOST.

From these studies, factors and attributes are extracted and combined to develop the knowledge management framework for the postal sector (KMPOST). The KMPOST framework is developed to address the deficiencies found in the existing frameworks and fills the gap by providing a framework specifically developed for the postal sector.

3.2 Selected KMS Frameworks

From the studies that have been carried out (see chapter 2), five KMS frameworks were selected. These frameworks are: Mostafa et al. (2007), Parag (2009), Rusli et al. (2008), Sajeva (2010) and Smuts et al. (2009). The frameworks were analysed and used as a benchmark to develop the KM framework for the postal sector.

Two criteria were used to select the five KMS frameworks: (1) frameworks that are approached from a social-technical perspective and (2) frameworks that are both descriptive and prescriptive. The selected frameworks were compared based on: (1) the study objective, (2) the problem area to be addressed, (3) the KMS focus, (4) the

application of an industry KMS, (5) the KMS framework attributes and (6) the methodology for implementing the framework (see section 3.3).

3.2.1 Social-Technical Perspective

Experts argue that for a knowledge management framework to address the current challenges in the business workplace adequately, the integration of social and technical dimensions is crucial (Kamla et al., 2010; Nevo & Chan, 2007; Rusli et al., 2008; Stafford, 2009). This claim is supported by Smuts et al.'s (2009) definition of a KMS. This definition identifies the key factors of knowledge management in today's dynamic business environment as the knowledge, human–social, technology and strategy factors (organizational policies, processes, plan, culture, etc.). The selected KM framework consist of attributes from social and technical perspective of KM as shown on table 3.3

3.2.2 Descriptive and Prescriptive Perspectives

A KM framework can be prescriptive, descriptive or a combination of the two. A prescriptive KM framework provides direction on the KMS task or functionalities without providing specific details of how those tasks or functionalities should be accomplished. In contrast, a descriptive KM framework describes how a KMS can be implemented. Rubenstein-Montano et al. (2001) state that a framework for designing KMSs needs to be both descriptive and prescriptive. The selected frameworks posed the combination of these perspectives, they provide the functionalities and guides for the implementation of the KM in the frameworks.

The discussions in chapter two show that lack of social – technological approach to the development of KM frameworks results in imbalance in their design and lack comprehensive attributes. The imbalanced approach in designing a KM framework is regarded as placing too much emphasis on technological issues at the expense of social or organizational and knowledge factors or neglecting technological issues

while placing the emphasis on social and knowledge issues (Hahn and Subramani, 2000; McDermott and O'Dell, 2001; Moffett et al., 2003; Storey and Quintas, 2001). Meanwhile, the lack of comprehensiveness is acknowledged by Sunassee and Sewry (2002).

Therefore, the KMPOST framework attempts to address the issue of the “imbalanced” by adopting a social-technical approach in developing the framework taking into consideration issues regarding technological, social and knowledge dimensions. The issue of the lack of comprehensiveness of attributes is addressed by extracting and combining the attributes from the selected KMS frameworks, literature review and postal strategy plans.

3.3 Analysis of the Selected KMS Frameworks

In qualitative analysis, the same data can be analysed and synthesized from different perspectives, depending on the particular research questions being addressed.

Analysing qualitative data involves examining, comparing, contrasting and interpreting meaningful patterns from the collected data to determine how they answer the research question at hand.

In this research, the qualitative data analysis framework developed by Miles and Huberman (1994) is adopted. This framework describes three phases of analysing qualitative data: data reduction, data display and conclusion drawing and verification.

According to Miles and Huberman (1994), data reduction refers to the process of selecting, focusing, simplifying and abstracting data to become intelligible in terms of the issue being addressed. Data reduction is guided primarily by the need to address the research objective. Therefore, the five selected KM frameworks are summarized in table 3.1 such that the general context in which each of the frameworks was developed is understood clearly. The composition of each of the selected frameworks was explained and the attributes of each KMS framework were identified.

The first column in the table lists the authors of the five selected frameworks. The second column presents the differing study objectives of the selected frameworks. The study objectives are aimed at addressing specific knowledge management problem areas. To address these, different strategic approaches to the development of the KM framework are adopted. The KMS focus for each of the frameworks is presented in column four. Four of these frameworks are developed to address knowledge management problems in specific industries, while one is a generic KM framework. This is presented in column five. The numbers of attributes of each framework are presented in column six. Finally, the methodologies adopted to implement the frameworks are presented in column seven.

Table 3.1 Selected KMS frameworks

AUTHOR(S)	STUDY OBJECTIVE	IDENTIFIED PROBLEM AREA	KMS FOCUS	INDUSTRIES KMS APPLIED	KMS FRAMEWORK ATTRIBUTES	METHODOLOGY
Mostafa et al. (2007)	To investigate the role of KM in aerospace industries and to provide a framework for KM efforts designed for aerospace industries	Loss of vital knowledge and experiences	Integrated KMS framework	Aerospace industries	Twenty-two	Multi-case analysis of current KM perspective in aerospace industries
Rusli et al. (2008)	To analyse the perception, acceptance and implementation of the current KMS framework in learning institutions	The KMS framework does not adequately fulfil the KMS needs of organizations	Modified KMS framework	Learning institution	Twenty	Literature analysis and field survey
Smuts et al. (2009)	To provide a more comprehensive framework and methodology for KMS implementation	Low customer satisfaction of the Customer Service Centre	Comprehensive KMS framework and methodology	Mobile telecommunication industries	Eighteen	Proof of concept research approach
Parag(2009)	To study/survey knowledge management practices in India	Lack of human aspects in the KMS framework	Two-perspective approval for KMS framework	Indian business industries	Eleven	Survey of KM practices in India
Sajeva(2010)	To analyse the key elements of social–technical KMSs	Different approaches to KM	Social–technical KMS	Generic	Eleven	Comparative scientific literature analysis

Table 3.2 Attributes of the selected KMS frameworks

AUTHOR(S)	MOSTAFA ET AL. (2007)	RUSLI ET AL. (2008)	SMUTS ET AL. (2009)	PARAG (2009)	SAJEVA (2010)
KMS FRAMEWORK ELEMENTS					
1	Knowledge strategy	Strategy	KM principles and governance	Attitude	Knowledge identification
2	Knowledge centres	Belief	Organizational structure and sponsorship	Personality	Knowledge acquisition
3	Strategic research centre	Value	Requirements analysis	Leadership	Knowledge creation
4	Knowledge capturing	Experience	Measurement	Structure	Knowledge storage
5	Knowledge identification	Capturing	Knowledge audit	Strategy	Knowledge dissemination
6	Knowledge organizing	Sharing	Initiative scoping	System	Strategic leadership
7	Knowledge storage	Dissemination	Prioritization	Technology	Organizational learning
8	Personnel KM	Using	Technology solution assessment	Rewards	Organizational infrastructure
9	Knowledge base	Application	Planning	Culture	Knowledge culture
10	Knowledge sharing	Functionality	Knowledge education	Training	Technological infrastructure
11	Knowledge committee	Technology	Building	Learning	Values and beliefs
12	Network of experts	Infrastructure	Pilot	X	Collaboration
13	Training programme	Repositories	Review and upgrade	X	Learning
14	Reward and promotions system	Motivation	Knowledge maintenance processes	X	Vision
15	Re-engineering	Reward	Publish	X	Promotion

16	Education	Performance	Communication and change management	X	Direction
17	Pilot	Security	Maintenance and support	X	Formal and informal structures
18	Technology	Compatibility	Measurement and reporting	X	X
19	Trust	Broadcast	X	X	X
20	CEO support	Training and learning	X	X	X
21	Culture	X	X	X	X
22	Transparency	X	X	X	X

Note: X represents an attribute that is not available in the framework.

The next step of the analysis is data display. Data display provides an organized, compressed assembly of information that permits comparison and conclusion drawing. The data present the attributes of each of the framework (see table 3.2), these attributes differ from framework to framework. However, some attributes are common to all the frameworks

The attributes of the selected KM frameworks cut across the social–technical aspects of KM frameworks as defined by Smuts et al. (2009). For the purpose of this research, the attributes are classified into three groups of social-technical KM framework components, these are:

- Knowledge,
- Technology and
- Human–Social.

The attributes of the selected frameworks are aggregated under these respective factors. That is, all the attributes that are human–social-related in the five KMS frameworks are aggregated into the human–social factor. The classification is presented in figure 3.1, which shows that the human–social factor has 32 attributes, the knowledge factor has 20 attributes and the technological factor has 8 attributes.

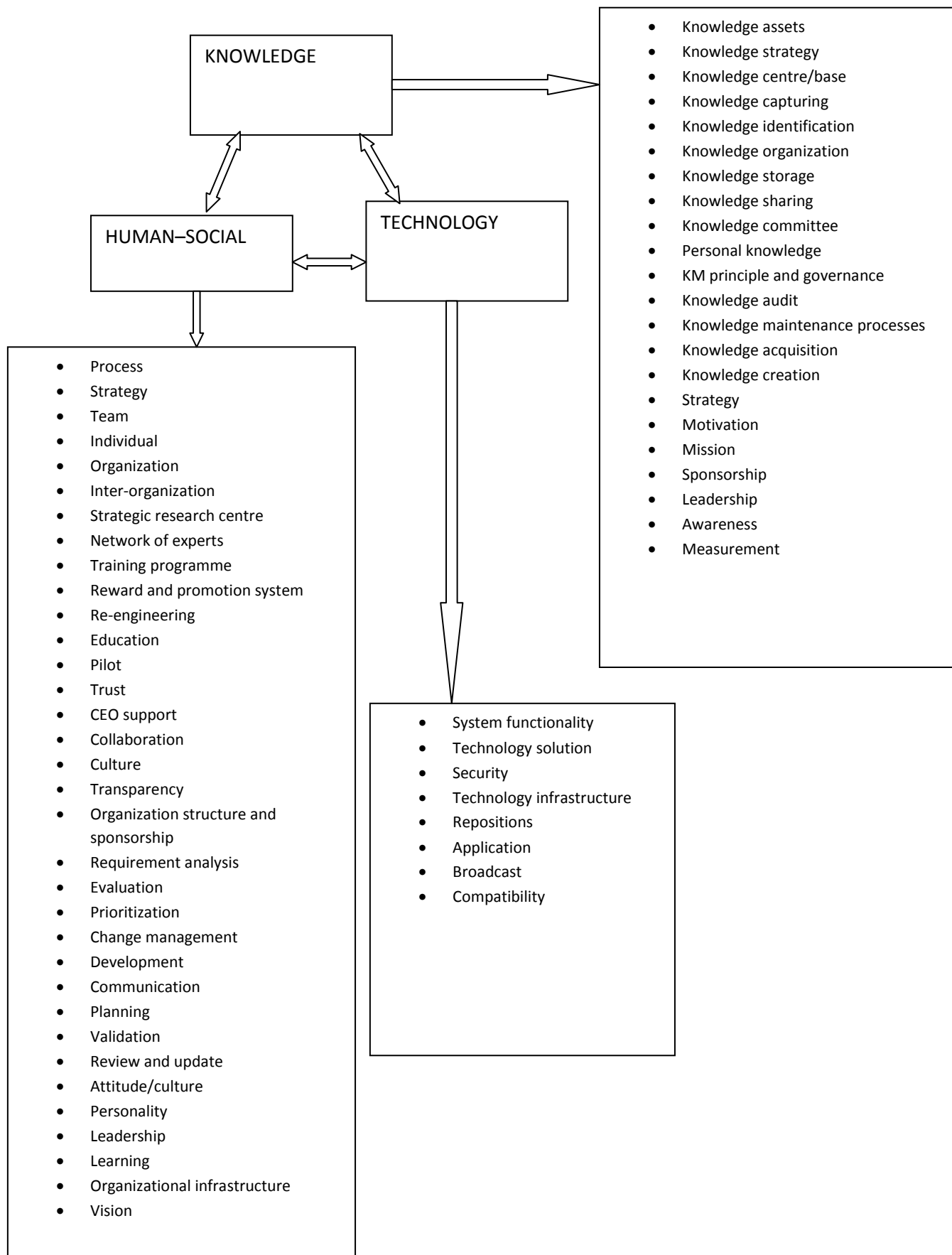


Figure 3.1 Factors and attributes of the selected KMS frameworks

The presentation above depicts the dominant role of the human–social context in implementing KM. It shows that management of knowledge involves more than simply exploiting the data held on an information system. Grundstein (2008) acknowledges that knowledge resides primarily in the heads of individuals and new knowledge is gained from social interaction between these individuals.

Despite the dominant role of the human–social factor, integration of the technological, human–social and knowledge perspectives would help organizations to manage their knowledge most effectively. Hence, in developing a KM framework, attempt should be made to harmonize technological drivers and human–social enablers to achieve the business objective of an organization (Yang and Chen, 2009).

3.4 Comparative Analysis of the Selected KM Frameworks

A comparison of the elements of the five selected KM frameworks is shown in table 3.3. The mark ✓ signifies that the attribute is considered in the KM framework and X signifies that the attribute is not considered in the KM framework. The table shows that each of the selected KM frameworks comprises attributes from the human–social, technological and knowledge factors. This means that the selected five KM frameworks represent a social-technical KM framework. However, none of the KMS frameworks presents the whole spectrum of attributes as depicted in table 3.3. Each of the KM framework focuses more on one or two sub-system(s) than on others. That is, some lay greater emphasis on the human–social component and the knowledge factor than on the technological factor, as in Mostafa et al. (2007), for example.

To create an effective KMS in an organization, there is a need to ensure that the relevant attributes of the knowledge management activities in the organization and its environment are considered in designing and developing the KM framework. Attributes from the human–social, technology and knowledge factors

need to be harmonized. Consequently, this research presents an improved KM framework that combines all the key attributes presented in the five selected KMS frameworks, literature review and the UPU's postal strategy plans..

Table 3.3 Comparison of the selected KMS frameworks

FACTORS	ATTRIBUTES	AUTHOR(S)				
		MOSTAFAE T AL. (2007)	RUSLI ET AL. (2008)	SMUTSE T AL. (2009)	PARAG (2009)	SAJEVA (2010)
HUMAN- SOCIAL	Processes	X	X	X	X	X
	Strategy	X	✓	✓	✓	X
	Belief and value	X	✓	X	X	X
	Experience	X	✓	X	X	X
	Performance	X	✓	X	X	X
	Awareness	X	✓	X	X	X
	Strategic research centre	✓	X	X	X	X
	Network of experts	✓	X	X	X	X
	Training programme	✓	✓	X	✓	X
	Rewards and promotion system	✓	✓	X	✓	✓
	Re-engineering	✓	X	X	X	X
	Education	✓	X	✓	X	X
	Pilot	✓	X	✓	X	X
	Trust	✓	X	X	X	X
	CEO support	✓	X	✓	X	X
	Collaboration	✓	X	X	X	✓
	Culture	✓	X	X	✓	X
	Transparency	✓	X	X	X	X
	Sponsorship	X	X	✓	X	X
	Requirement analysis	X	X	✓	X	X
	Prioritization	X	X	✓	X	X
	Measurement	X	X	✓	X	X

	Initiative scoping	X	X	✓	X	X
	Implementation	X	X	✓	X	✓
	Publication	X	X	✓	X	X
	Structure	X	✓	X	X	✓
	Motivation	X	✓	X	X	X
	Communication and change management	✓	X	✓	X	X
	Planning	X	X	✓	X	X
	Review and updates	X	X	✓	X	X
	Attitude	X	X	X	✓	X
	Personality	X	X	X	✓	✓
	Leadership	X	X	X	✓	✓
	Learning	X	✓	X	✓	✓
	Organizational infrastructure	X	✓	✓	✓	✓
	Vision	X	X	X	X	✓
TECHNOLOGY	Compatibility	X	✓	X	✓	X
	Application	X	✓	X	X	X
	Systems functionality	X	X	X	X	X
	Technology solution assessment	✓	X	✓	✓	X
	Technology infrastructure	X	X	X	X	X
	Security	X	✓	X	X	X
	Repositories	✓	✓	X	✓	✓
KNOWLEDGE	Knowledge strategy	✓	X	X	X	X
	Knowledge centre/base	✓	X	X	X	X
	Knowledge capturing	✓	✓	X	X	X
	Knowledge identification	✓	X	X	X	✓
	Knowledge organizing	✓	X	X	X	X

Knowledge storage	✓	✓	X	X	✓
Knowledge sharing	✓	✓	X	X	✓
Knowledge committee	✓	X	X	X	X
Personal knowledge	✓	X	X	X	X
KM principle and governance	X	X	✓	X	X
Knowledge audit	X	X	✓	X	X
Knowledge maintenance processes	X	X	✓	X	X
Knowledge acquisition	X	X	X	X	✓
Knowledge creation	X	X	X	X	✓
Knowledge culture	X	X	X	X	✓
Knowledge methodology	✓	X	✓	X	X

Note:“✓”representsan attribute that is available in the framework and “X” representsan attribute that is not available in the framework.

3.5 Discussion

From the analysis in the previous sections, it is apparent that the selected frameworks have attributes in each of the factors (human–social, knowledge and technology), as well as attributes for strategy to sustain KM implementation. However, none of the frameworks presents the whole spectrum of attributes in the comparison table 3.3. For example, the concepts of learning and organization’s infrastructure are not considered in the framework of Mostafa et al. (2007). The concept of knowledge methodology is not mentioned in the framework of Rusli et al. (2008). In the framework proposed by Smuts et al. (2009), the concepts of training, culture, learning and so on are not presented, while the concepts of management support, awareness, motivation and so on are not considered in the framework presented by Parag (2009). In the framework presented by Sajeve (2010), the concepts of strategy, culture, knowledge audit and so on are not identified.

It is also noted that each of the frameworks places more emphasis on one or two factors than on the others. For example, attributes of the technology and knowledge factors are not adequately addressed in the frameworks of Parag (2009) and Sajeve (2010) compared with the other three frameworks.

It is also observed that some attributes in the selected frameworks are complementary and thus can be grouped and renamed. For example, in the knowledge factor, some of the attributes presented, such as knowledge capturing and knowledge sharing, can be considered as part of the knowledge management function and task. Furthermore, attributes like team, individual, organization and inter-organization can be represented by the KM stakeholders.

Based on the above discussion, some attributes are grouped and renamed in the next section.

3.5.1 Human–Social Factor

Figure 3.1 shows 32 attributes in the human–social factor. These attributes are reviewed and harmonized to ensure that those that are similar are merged. Some attributes are extracted to other factors based on the researcher’s understanding. From the human–social factor, the following attributes –

process, strategy, planning, learning, culture and vision –are viewed as strategic issues. The attributes team, individual, organization and inter-organization are represented within the stakeholder forum. The attributes strategic research centre, training programme and education are represented within education and training, while attributes such as prioritization, development, evaluation and pilot are represented within adaptability. In the literature review, some attributes were noted as critical to the human–social component. These are experimentation (Gandong et al., 1999; Malhotra, 2000), diversity (Peyman et al., 2005), re-alignment (Arntzen and Martin, 2007; Sunasseen and Sewry, 2003), government policy (Stafford, 2009) and psychology (Arntzen and Martin, 2007; Rusli et al., 2005, 2008). Combining and aggregating the attributes from the selected KM frameworks and those from the literature review, there are 19 attributes for the human–social component: organizational structure, management support, experimentation, diversity, re-alignment, requirement analysis, adaptability, change management, education and training, stakeholder forum, government policy, collaboration, communication, leadership, re-engineering, network of experts, psychology, reward and incentives, trust and transparency.

3.5.2 Technology Factor

The technology factor consists of 8 attributes, as shown in figure 3.1. These attributes are reviewed. Compatibility is presented with system integration. Application and technology solutions are presented within technology solution. Repositories are presented within data management. The literature review showed that there are attributes that are considered as critical to the technology component. These are: accessibility (Nevo and Chan, 2007), interoperability (Cuel, 2003), system functionality (Weber, 2007), scalability (Nevo and Chan, 2007), cost-effectiveness (Nevo and Chan, 2007), user-friendliness (Rusli et al., 2006), information flow (Stafford, 2009), architecture (Rusli et al., 2008; Weber and Gunawardena, 2008) and multi-media and agent-based system (Nevo and Chan, 2006; Rusli et al., 2008; Stafford, 2009). Combining and aggregating the attributes from the selected KMS frameworks and those from the literature

review, there are 16 attributes. These are: technology infrastructure, technology solution, accessibility, data management, system functionality, interoperability, system integration, scalability, cost-effectiveness, user-friendliness, security, architecture, information flow, multi-media, agent-based system and broadcast.

3.5.3 Knowledge Factor

The knowledge factor has 20 attributes, as shown in figure 3.1. These attributes are reviewed. Knowledge capturing, knowledge storage, knowledge sharing, knowledge creation, knowledge organizing, knowledge acquisition and knowledge identification are presented as knowledge functioning and task. From the literature review, it is apparent that the following attributes are considered critical: institutionalization (Smuts et al., 2009), budget (Parag, 2009), integration (Hsia et al., 2006), documentation (Rusli et al., 2006), knowledge template (Stafford, 2009), data protection and privacy (Nevo and Chan, 2007), content and context (Gandong et al., 1999) and taxonomy (Rusli et al., 2008). Combining and aggregating the attributes from the selected frameworks and those from the literature review, 19 attributes are obtained. These attributes are: institutionalization, motivation, mission, strategy, budget, integration, principle and governance, sponsorship, functionality and task, documentation, template, leadership, data protection and privacy, measurement, awareness, taxonomy, content and context.

The attributes for the three factors of the KM framework from the discussions above are presented in figure 3.2. The three factors (knowledge, technology and human–social) of the KM framework have a total of fifty-five attributes considered necessary to influence the successful implementation of a KMS. This is the most comprehensive list of attributes compared with the existing KM frameworks in the literature review.

<u>Technological System</u>	<u>Human–Social System</u>	<u>Knowledge System</u>
- Technology Infrastructure	- Organizational structure	- Institutionalized
- Technology solution	- Management support	- Motivation
- Accessibility	- Experimentation	- Mission
- Data management	- Diversity	- Strategy
- System functionality	- Alignment	- Budget
- Interoperability	- Requirement analysis	- Integration
- System integration	- Adaptability	- Principle of governance
- Scalability	- Change management	- Sponsorship
- Cost-effectiveness	- Education and training	- Functionality/task
- User-friendliness	- Stakeholder forum	- Documentation
- Security	- Government policy	- Knowledge template
- Architecture	- Collaboration	- Leadership
- Information flow	- Communication	- Data protection and privacy
- Multi-media	- Leadership	- Measurement
- Agent-based system	- Re-engineering	- Awareness
- Broadcast	- Network of experts	- Taxonomy
	- Psychology	- Content and context
	- Reward and incentive	- Management

Figure 3.2 Reviewed factors and their attributes on the KMS

3.6 The Postal Sector

The postal sector has existed for over two thousand years and has historically been important to the development of nations (Lohmeyer and Lanni, 2001). It is an integral part of the global economy, and a driver of the distribution and delivery of goods and services. Its activities broadly cover the logistics, distribution and delivery of mail items, such as letters, parcels, the Expedited Mail Service (EMS) and mailbox rental. It also offers other related services, such as bill payment, e-commerce/business or money orders, pension payment and other account-based financial services and new IT-based services.

Strong postal infrastructures can also support the growth of the new economy in other ways, such as through the provision of efficient and widespread postal financial services. These services can facilitate the achievement of a nation's financial inclusion programmes. The postal sector can also serve as a “trusted third party” to ensure that the exchange of goods and payments between seller and buyer is accomplished with speed, security and reliability. The postal services are summarized in figure 3.3.

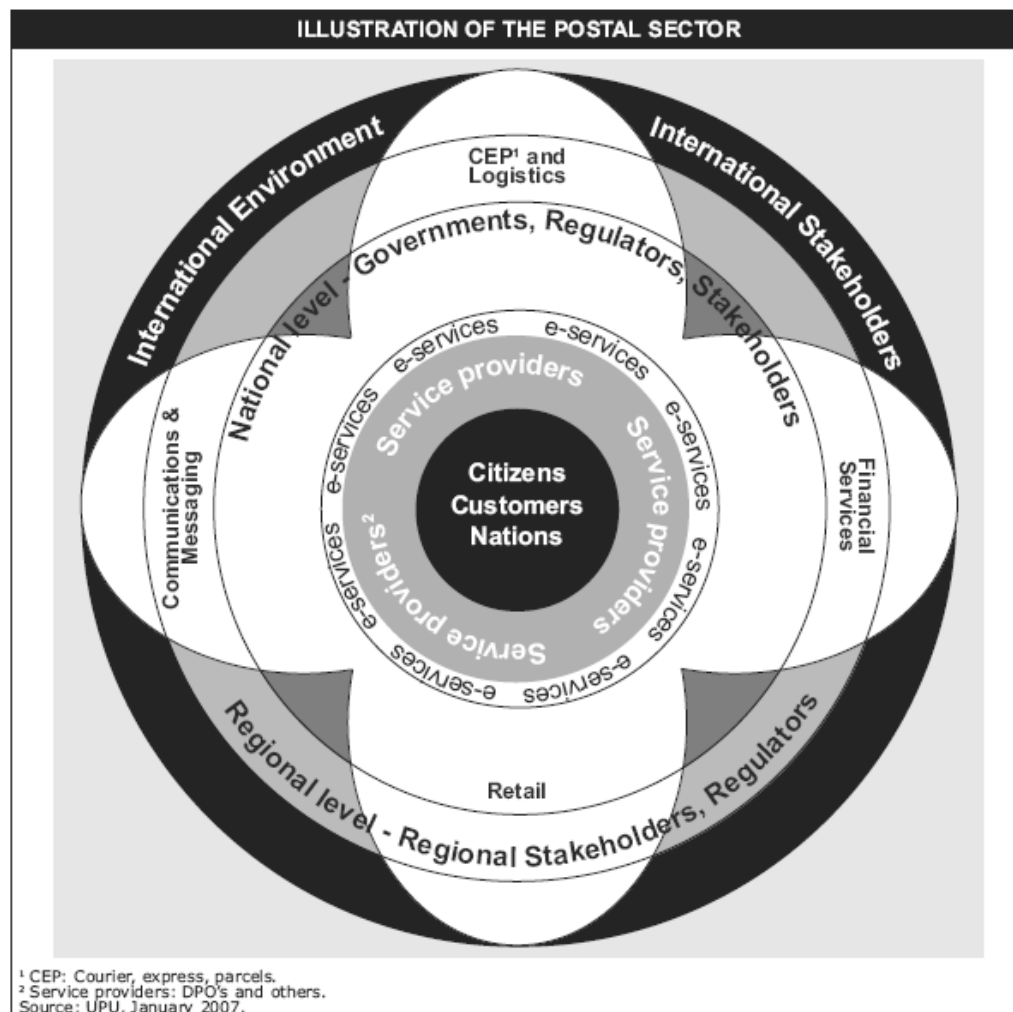


Figure 3.3 Illustration of the postal sector activities

The postal sector involves many postal players and stakeholders, the activities of which are coordinated by the Universal Postal Union (UPU). To ensure sustainable development of the postal sector in the constantly changing economic, social, technological and commercial environment in which the postal

sector operates, it is necessary for the sector to have a clear strategic roadmap that enables it to tackle its challenges both in the present and in the future.

Despite this long history, today, the postal sector is facing great challenges. These challenges include: increasing competition, new customer expectations, government reforms, technological advances, globalization and liberalization of marketplaces.

3.7 The Postal Sector and Knowledge Management

The term “knowledge management” might have a variety of meanings in postal organizations. However, there is evidence of the spirit of knowledge management in postal organizations (Hackett, 2000).

Knowledge management activities and initiatives in the postal sector are driven by Development Cooperation Directorate of the UPU. The Directorate ensures the transfer of best practices of postal operations, policies and technologies among postal organizations. This knowledge (know-how) is mostly transferred from the postal organizations of developed countries to the postal organizations of developing countries. The knowledge management activities in this sector are promoted through the following activities:

- Bilateral and multilateral cooperation between member countries
The Universal Postal Union generally promotes multilateral cooperation on policies, strategies, technologies and so on among member countries. The actual implementation of the cooperation is achieved through bilateral agreement between the interested countries.
- Regional training of trainers to develop the local capacity
The Universal Postal Union has regional postal training institutes. These institutes focus on manpower development in the postal sector. They offer training in all postal operations. Member countries nominate their staff for such training, and the trained staff are expected to develop the local capacity in their respective countries.
- Annual POST-EXPO workshops and seminars

The annual POST-EXPO provides the platform for postal organizations from across the globe to discover new trends, discuss developments within the sector and generate ideas that will shape the future of the postal sector.

- Exchange programme between postal organizations

To facilitate the learning of best practices in the postal sector, the UPU encourages an exchange programme among postal organizations. This programme allows staff of a postal organization to work in another postal organization for a period of three to twelve months. The aim of this programme is to facilitate learning on the job and the sharing of knowledge.

- Postal Technology International publication

The Postal Technology International publication presents lessons learned from different postal organizations. It also presents new innovations within the postal sector.

Despite this level of knowledge management activities in the postal sector, no specific knowledge management framework has been developed specifically for this sector. Therefore, the aim of this research focuses on developing a knowledge management framework for the postal sector (KMPOST).

3.8 Review of Universal Postal Union's Postal Strategy Plans

The UPU was established in 1874, with its headquarters in the Switzerland, Bern, is the second-oldest international organization after the International Telecommunication Union (ITU). Currently consisting of 192 member countries, the UPU is the primary forum for cooperation between postal sector organizations and helps to ensure a truly universal network of up-to-date postal products and services.

It sets the rules for international mail exchanges and makes recommendations to stimulate growth in postal volumes and improvements in the quality of postal products and services.

For the purpose of this research, the researcher reviewed the Nairobi Postal Strategy (NPS) 2009 to 2012 and the Doha Postal Strategy (DPS) 2013 to 2016. These postal strategies fall within the period of this research. The review of these strategies aimed to give the researcher a better understanding of the strategic focus and the KM needs of the postal sector and contributed to the development of the knowledge management framework for the postal sector (KMPOST).

The NPS lays a solid foundation for global, regional and national strategic planning processes for the postal sector from 2009 to 2012 (four years). This strategy document outlines the objectives and goals adopted with specific programmes executed by all the players in the postal sector. The NPS defines four objectives as follows:

1. Improving the interoperability, quality and efficiency of the three-dimensional postal network to keep the sector relevant to the market and customer needs;
2. Stimulating universal postal services adapted to the social, economic and technological environment;
3. Promoting sustainable development of the postal sector and its economy;
4. Fostering the growth of the postal markets and services.

The four objectives could be summarized as achieving growth, sustainable development, efficiency and improvement. These objectives can be addressed adequately with the deployment and implementation of KM by the postal organizations.

The DPS is the UPU's reference document for the period 2013 to 2016 (four years). It establishes four objectives for the sector and outlines broad lines of actions and programmes for implementation in the sector. The DPS objectives are:

1. Improve the interoperability of the international postal network;
2. Provide technical knowledge and expertise related to the postal sector;
3. Promote innovative products and services;

4. Foster sustainable development of the postal sector.

Identified key words from the four objectives are improvement, technical and expertise, innovation and sustainable development.

An understanding of these postal strategy plans is critical for identifying the knowledge management needs and the key factors and attributes to be considered in the development of KM framework in the postal sector. The researcher studied the objectives outlined by each of the postal strategies plan, the programmes defined and then suggested factors that would influence the achievement of the desired objectives (see figure 3.3).

From this review, six factors were identified by the researcher as critical to facilitating the successful implementation of the programmes of the postal strategy by the different postal organizations. These factors are:

- Critical information
- System thinking
- Learning
- Human creativity
- Knowledge
- Organizational philosophy

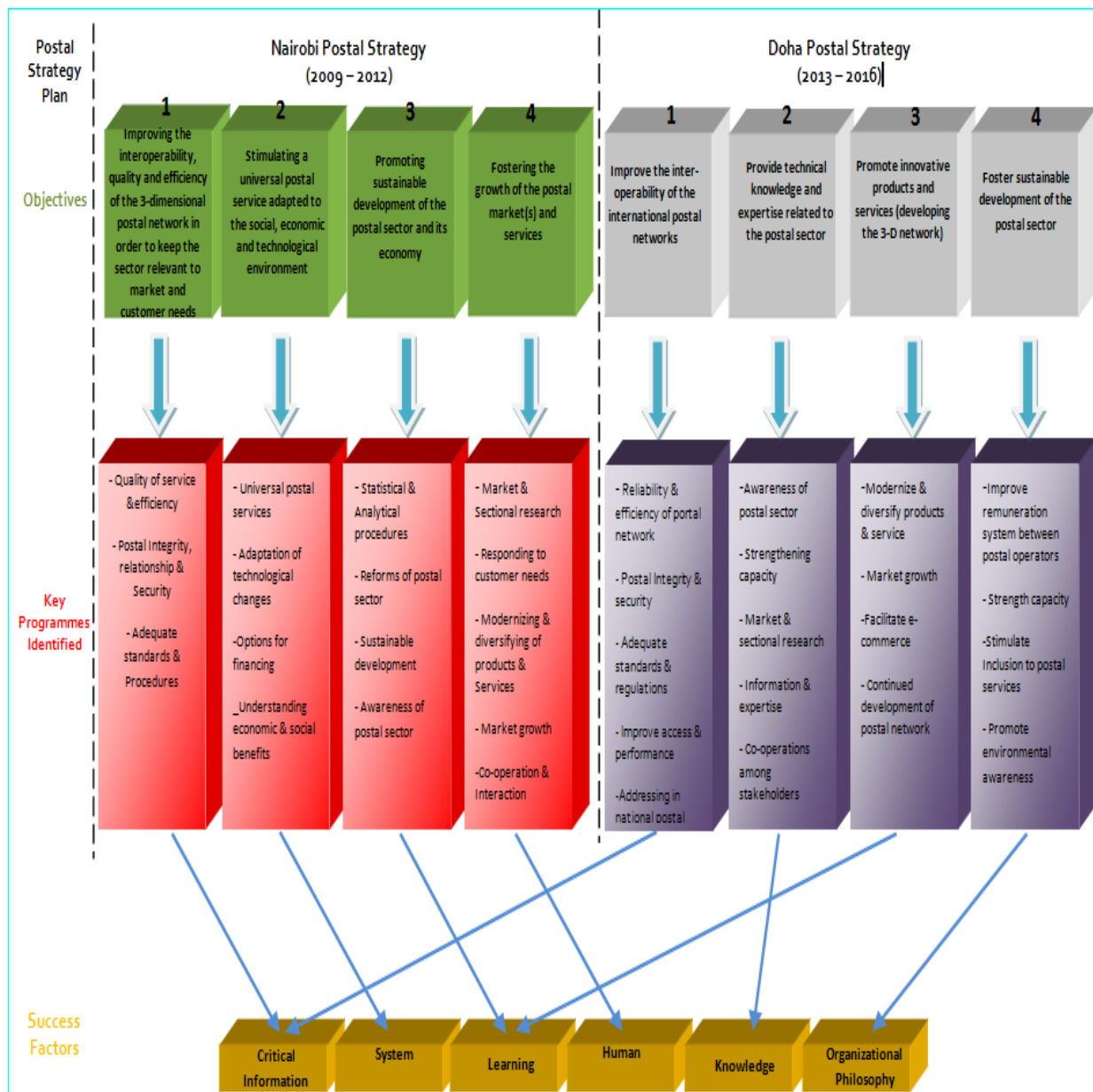


Figure 3.4 Postal strategy plans (2009 to 2012 and 2013 to 2016)

Critical information in this research means timely, accurate and reliable information for effective decision making. Critical information is considered necessary factor to promote the postal national addressing system, develop adequate standards and regulations and ensure integrity and reliability of the postal network. To facilitate the provision of the universal postal service and the understanding of the economic, social and technological environment in which the postal sector operates, system thinking is considered a critical factor. It enables postal organizations to view postal sector from a holistic perspective.

Learning is considered critical for the successful implementation of postal reforms and for promoting sustainable development in the postal sector. Postal organizations need to learn from one another. There is no need to reinvent the wheel. Modernization and diversification of postal products and services could be influenced by human (employee) creativity in the postal sector. That is, the extent to which transformation is carried out in the postal sector depends on the willingness of the employees to be creative. Knowledge is identified as critical for sharing of information and expertise and cooperation among stakeholders in the postal sector. To improve the business working environment and strengthen the capacity building of the postal employees, the organizational philosophy is considered as a critical factor. The organizational philosophy defines the way in which postal organizations behave and how they conduct its affairs.

3.9 Current KM practice in the Nigerian Postal Service (NIPOST)

The Nigerian Postal Service is a government agency charged with the responsibility for providing postal services in Nigeria. It is a member of the UPU. It was established on 1 January 1985 through a government statutory proclamation to meet the postal needs and requirements of Nigeria as well as between Nigeria and the international community. NIPOST has staff strength of about 10,000 workers and about 3,000 post office outlets. It has the largest office branch network in Nigeria and is the country's major postal service provider.

NIPOST is confronted with knowledge retention challenges (see section 1.2) as a result of the staff retirement carried out by the Federal Government of Nigeria in 2005 – 2007. A survey on KM practice in NIPOST is conducted to find out the current issues and processes of the KM implementation. This study helps to identify the factors that affect the successful implementation of the KM and the optimization of the benefits of implementing the KM to address the issues of knowledge retention in NIPOST.

In developing the KMPOST framework, these factors were taken into consideration with the view to address the limitations experienced in implementing the KM in NIPOST.

For NIPOST to overcome these limitations, the following recommendations are made:

1. A comprehensive KMS approach

The survey showed that the KM is practised in NIPOST as an adhoc function. That is, whenever there is a business problem or need, selected workers are put together as a committee to find the best approach to solving the specific problem. Thereafter, the committee ceases to function. The knowledge so created is not institutionalized. This is due to the lack of a central repository for knowledge storage and appropriate technology for knowledge sharing.

NIPOST fails to view the KM as a system and a continuous process, in which not only is knowledge harvested and shared, but new knowledge is created as an ongoing process.

The knowledge management requires considerable and deliberate efforts, as well as cultural change on the part of NIPOST. To make a difference, NIPOST needs to introduce a comprehensive approach to the management of its organizational knowledge. NIPOST should view KM as a continuous process that develops and changes with the change in business processes and the environment.

KM framework with comprehensive attributes of KM activities is needed, as presented in the KMPOST framework (see chapter six) to enhance the KM practice in NIPOST.

2. Integration of learning into KM frameworks

The process of learning enables knowledge creation and dissemination. Learning and knowledge management go hand in hand. They form a powerful force for improving organizational performance and accelerating

the career growth of employees in the organization. Knowledge management facilitates the processes for learning and collaboration in an organization. A learning organization is a knowledge-driven organization. Therefore, for successful implementation of the KM in NIPOST, the concept of learning needs to be integrated into the KM framework, as presented in the KMPOST framework.

3. Deploying appropriate technologies for the KMS

Considering the nationwide spread of post office outlets (3,000) in Nigeria and the workforce of about 10,000 employees, an effective and efficient knowledge management system requires technology platforms that can facilitate knowledge sharing and storing. The current practices of storing and sharing knowledge and related documents on paper have major limitations. These can be reduced by deploying more appropriate modern technology. To maximize the advantages of knowledge management, knowledge needs to be available across the whole organization.

While technology is not the only important aspect of the knowledge management system, it plays a crucial role in facilitating communication and collaboration among the knowledge workers in an organization. Technology should be seen as a tool for assisting the process of knowledge management in NIPOST. Consideration of the attributes of the technological system presented in the KMPOST framework will guide NIPOST in choosing the appropriate technology.

4. Integrate KM practice into daily working

Knowledge management is about enhancing organizational effectiveness and contributing to organizational vitality and success. For NIPOST to integrate KM practice fully into its daily operations, it should become more focused on creating awareness and conducting training on knowledge management at all levels of the organization.

It should also create the right organizational structure and built-in motivation that will make knowledge management practice attractive to the employees.

To integrate KM practice into routine NIPOST jobs, there is a need to put in place a well-staffed KM team with a strong team leader that has cross-departmental expertise. Implementing the knowledge management system requires a broad range of expertise from a focused team that has skill and diverse experience. A strong team leader who has not only project management skills, but also a broad knowledge of organizational and excellent people skills is critical for the successful implementation of the KMS in NIPOST. This is because knowledge management practices cannot be imposed on employees. The team leader should ideally have skills and experience in change management.

Consideration of the human–social and knowledge systems of the KMPOST framework will guide NIPOST in human- and knowledge-related issues as regards designing and implementing the KMS.

3.10 Summary

This chapter presented five selected KM frameworks and a comparative analysis of the selected frameworks was presented. Based on the analysis, the attributes of the selected frameworks were classified into three factors: technology, human–social and knowledge.

A review of the postal strategy for 2009 to 2016 was carried out and the objectives and programmes outlined for implementation in the postal sector were considered, critical factors were identified for the successful implementation of these programmes to achieve the desired objectives.

The strategic role of the Universal Postal Union in promoting high-quality postal products and services was explained. Finally, the current KM practice in Nigerian Postal Service was examined.

These analyses form the benchmark for developing the Knowledge Management Framework for the Postal Sector (KMPOST).

The next chapter will discuss the research methodology adopted for this research work. It will present the techniques used for collecting data, and the choice of the appropriate strategies will be defined and justified for this research.

CHAPTER FOUR

Research Methodology

4.1 Introduction

This chapter discusses the research methodology employed to develop the Knowledge Management Framework for the Postal Sector (KMPOST). The techniques for collecting the necessary data are described and the choice of appropriate strategies is defined and justified for this research. Firstly, the research philosophy and approach are introduced, and the choice of action research as a research approach is justified. Secondly, the research design and processes are explained. Thirdly, the research techniques in terms of data collection and analysis are explained, as well as the rating and weight value techniques, and a discussion regarding the sample choice is presented. Finally, this chapter explains the concept of triangulation as it related to this research work.

4.2 Research Methodology

According to Hussey and Hussey (1997), research methodology is a system of explicit rules and procedures upon which research is based. It describes the overall approach used to generate new knowledge based on research philosophies. The research methodology includes research philosophies, research approach, and research design and research techniques.

The next sections explain the entire approach adopted for this research work.

4.2.1 Research Philosophies

In conducting research of any kind, a consideration of the philosophical stance or worldview is important (Guba and Lincoln, 1994). This stance should be coherent with the aims and nature of the research. In this regard, Easterby-Smith et al. (2002) indicate that there are at least three reasons why an understanding of philosophical issues is very useful.

Firstly, it helps in clarifying research designs that include the kind of evidence required and how such evidence will be gathered and interpreted. It further provides good answers to the main questions that are being investigated in the research.

Secondly, it helps the researcher to recognize which design will work better for the research under investigation; it also indicates the limitations of specific approaches and conversely the advantages of other approaches.

Thirdly, it identifies and avoids the creation of inappropriate designs that may sit outside the experience of the researcher.

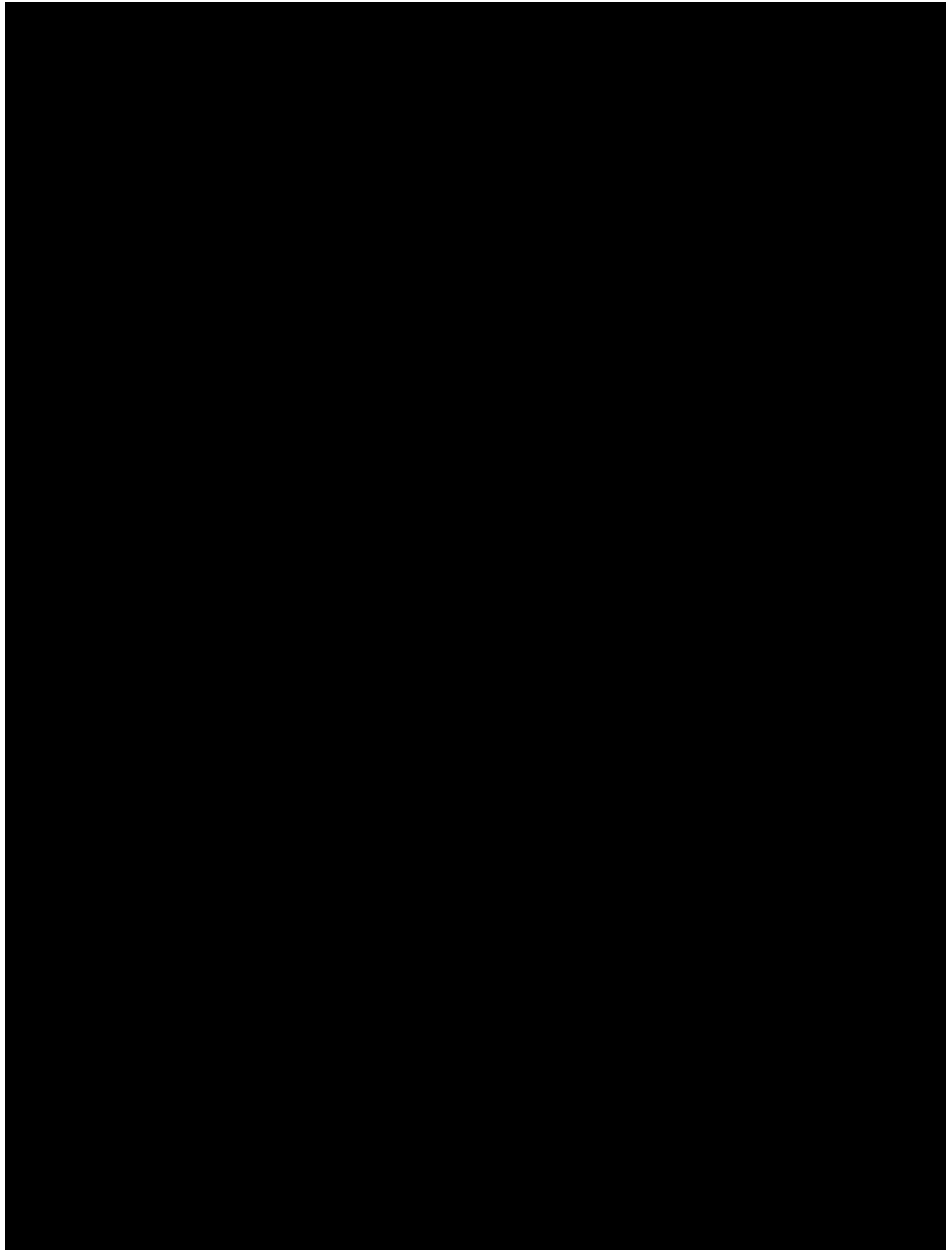
Broadly, research philosophies can be categorized into two major groups, namely positivism and interpretivism, and each is guided by different diametrically opposed philosophical assumptions.

Easterby-Smith et al. (2002) highlight the differences between positivism and interpretivism, showing the implications for research methodologies as presented in table 4.1.

Table 4.1 Contrasting implications of positivism and interpretivism (Easterby-Smith et al., 2002)

Item	Positivism	Interpretivism
The observer	Must be independent	Is part of what is being observed
Human interests	Should be irrelevant	Are the main drivers of the science
Explanations	Must demonstrate causality	Aim to increase the general understanding of the situation
Research progress through	Hypothesis and deductions	Gathering rich data from which ideas are induced
Concepts	Need to be operationalized so that they can be measured	Should incorporate stakeholders' perspectives
Units of analysis	Should be reduced to the simplest terms	May include the complexity of "whole" situations
Generalization through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Amaratunga et al. (2002) summarize the strengths and weaknesses of positivism and interpretivism as presented in table 4.2.



The positivist approach is objective in nature; it concentrates on measuring phenomena and involves collecting and analysing numerical data and applying statistical tests (Hussey and Hussey, 1997). The key idea of positivism is that

the social world exists externally. Positivism is grounded in a number of assumptions, such as hypotheses, deduction and generalization. It requires the sample selection to be of a sufficient size and the existence of factors that can be measured quantitatively.

Interpretivism emerged to the contrary of positivism in understanding human and social reality. The fundamental difference resides in the fact that social reality has a meaning for human beings and therefore human action is meaningful – that is, it has a meaning for them and they act on the basis of the meaning (Crotty, 1998). Interpretivism views reality not as a fixed entity but as constructions of the individuals participating in the communities of practice in which reality exists within a context.

This research adopts the social constructionist standpoint with a view to developing a framework for KM implementation in the postal sector. In such circumstances, Easterby-Smith et al. (2002) suggest that researchers should concentrate on the interpretation of the different constructions and meanings that individuals place on their experience with a view to understanding and explaining why they have such experiences and their underlying meaning.

Following the above discussions, this research takes the interpretivist paradigm. The essence of interpretivism is that reality is determined by people rather than by objective and external factors (Easterby-Smith et al., 2002). It is the job of the researcher to gain an understanding of people's thinking and to interpret their actions and their social world from their point of view (Bryman, 2001).

The next section highlights the research approach adopted in this research.

4.2.2 Research Approach

The approach to research may vary according to the context of the study, the beliefs, the strategies employed and the methods used. The research paradigm (a collection of assumptions and beliefs that will guide the researcher along the path to conducting research and interpreting findings) selected will be guided by both the researcher's subject discipline and the beliefs.

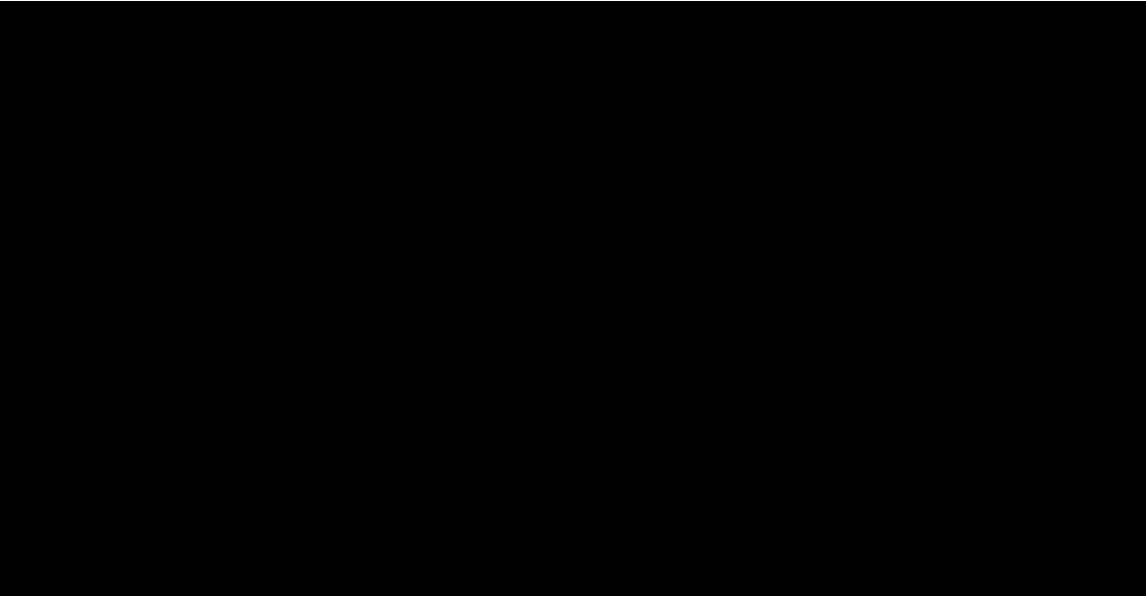
The term "paradigm" refers to the progress of scientific practice based on people's philosophies and assumptions about the world, the nature of knowledge and the way in which research is conducted (Hussey and Hussey, 1997). Furthermore, the authors classify the different types of research as depicted in table 4.3.

Table 4.3 Classification of the types of research (Hussey and Hussey, 1997)

Classification	Types of research
Purpose of the research	Exploratory, descriptive, analytical (explanatory) or predictive research
Process of the research	Quantitative or qualitative research
Logic of the research	Deductive or inductive research
Outcome of the research	Applied or basic research

Bell (1993) suggests five main approaches to conducting both scientific and social research. These are action research, ethnographic research, surveys, case studies and experiments.

Sexton (2003) presents these approaches according to their ontological and epistemological foundations, as shown in figure 4.1. The epistemological and ontological views may influence the research and the research methods to be used.



From an interpretivism perspective, there are three research approaches that can be adopted: ethnographic research, action research and case studies. The ethnographic approach is particularly appropriate when trying to understand the reasons for the behaviour of the subject over a prolonged period of time within a natural setting (Burns, 2000). Action research entails solving a problem by becoming part of the problem environment, with the goal of changing the status quo of the situation by changing the attitudes or the behaviour of the participants. The case study approach, as defined by Yin (1994), notes that the research should be “an empirical inquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident”. The experiments and surveys are in the realms of positivism. The action research approach is adopted for this research work; this is because the aim of this research is to offer a better framework for KM practice in the postal sector.

4.2.2.1 Action Research

Action research is an approach commonly used for improving conditions and practices in working environments (Lingard et al., 2008; Whitehead et al., 2003). The purpose of undertaking action research is to bring about change in specific contexts, as Parkin (2009) describes. Meyer (2000) maintains that action research’s strength lies in its focus on generating solutions to practical problems

and its ability to empower practitioners by encouraging them to engage with research and the subsequent development or implementation activities. The author further describes action research as a process that involves people and social situations that have the ultimate aim of changing an existing situation for the better.

In this research, action research is viewed as an approach employed by practitioners for improving practice as part of the process of change. The research is context-bound and participative. It is a continuous learning process in which the researcher learns and also shares the newly generated knowledge with those who may benefit from it.

The key concepts in action research include identifying the problem, planning the participation, observing and reflecting, as depicted in figure 4.2. To improve any business practice, there is a need to identify the existing problems on what is needed to be improved. Once the problem is identified, there is a need for adequate planning on how to solve the problem, and when the solution is derived and applied. There is a need to observe and reflect on the processes of change or effects on the solution of the problem. This processes requires iterations.

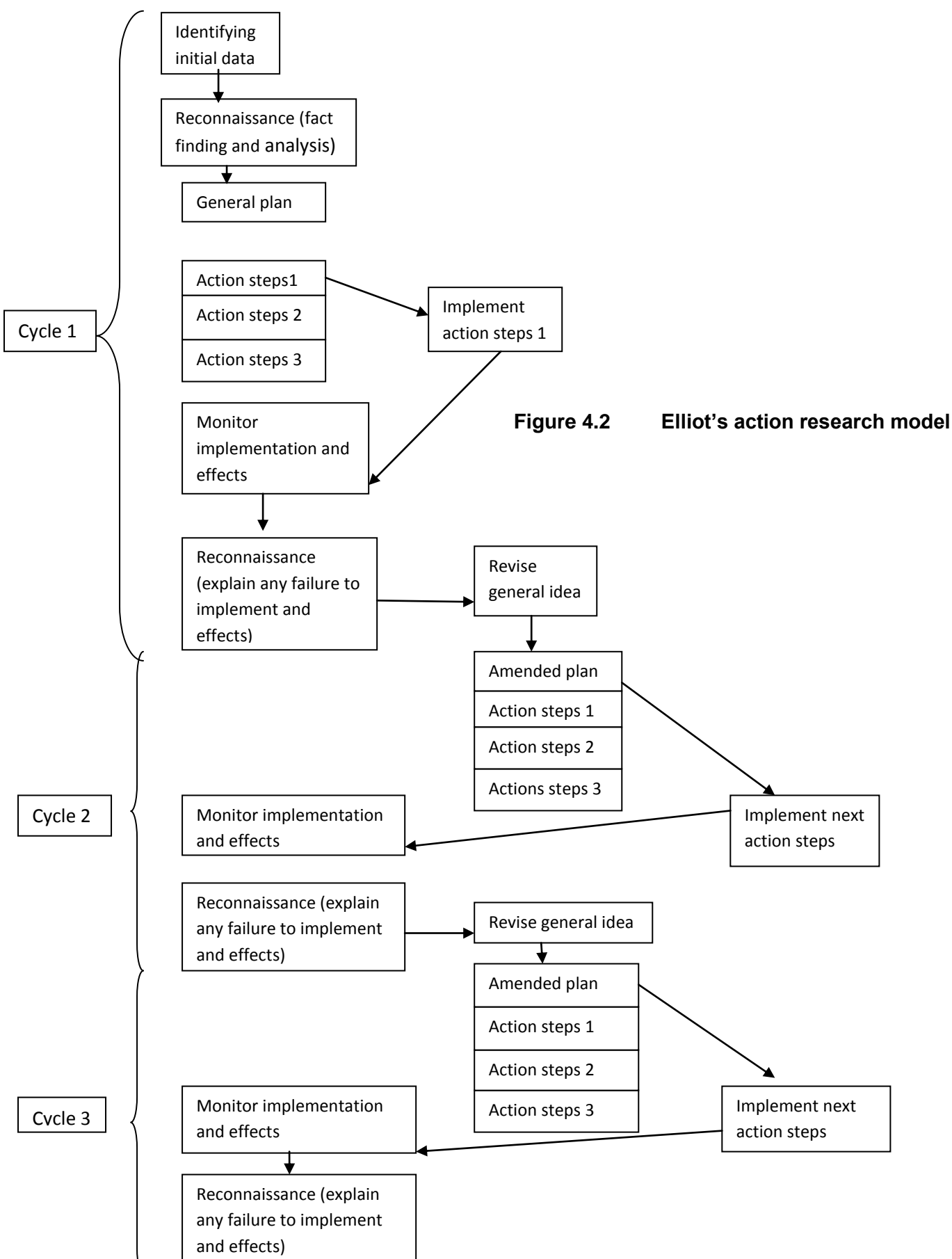


Figure 4.2

Elliot's action research model

4.2.2.2 Justification of the Research Approach

Reason and Bradbury (2001) explain that the primary purpose of action research is to produce practical knowledge that is useful to people in the everyday conducting of their lives. They maintain that action research is about working towards practical outcomes and that it is also about “creating new forms of understanding”.

With this purpose in mind, the following features of the action research approach are worthy of consideration:

- Action research is a method used for improving practice. It involves action, evaluation and critical reflection and – based on the evidence gathered – changes in practice are then implemented. It is participative and collaborative; it is undertaken by individuals with a common purpose.
- It is situation-based and context-specific.
- It develops reflection based on interpretations made by the participants.
- Knowledge is created through action and at the point of application.
- Action research involves problem solving, if the solution to the problem leads to the improvement of practice.

The main questions in this research concern the real-world operations and management problems faced in the postal sector and the research attempts to develop a conceptual framework will improve implementation in the sector. The development of a conceptual framework calls for the study to be exploratory in nature. Reviewing the different possible research approaches, the action research approach is identified as the most appropriate approach to fulfil the objectives of the research.

4.2.3 Research Design

The research design is the programme that guides the researcher in the process of collecting, analysing and interpreting observations (Nachmias and Nachmias, 1996). The aim of the research design is to satisfy the research aim and objectives. The research design embraces a number of research strategies. The decision of the choice between different research strategies is based on the specific features of the strategies (Yin, 2003). Denzin and Lincoln (2000) define

the research design as a “guide to the researcher in the process of collecting, analysing and interpreting observation”. It is a logical model of proof that allows the research to draw inferences concerning the causal relations among the variables under investigation. The research design should demonstrate how the research question will be answered and how the researcher intends to cope with the research. The design approach to this research is depicted in figure 4.3.



Figure 4.3 KMPOST research design

To achieve the objectives of this research, the research design (see figure 4.3) was designed to guide the researcher. As stated earlier, the aim of this research is to develop a KM framework for the postal sector, since no similar KM frameworks have been developed specifically for the postal sector in the literature to achieve this related KM frameworks from relevant journals and books were reviewed (see chapters 2). The literature review gave the researcher a better understanding of the issues related to the existing KM frameworks. This understanding guided the researcher in the development of the KMPOST model.

Based on the literature review, five KM frameworks were selected for further analysis and findings. This analysis enabled the researcher to learn about the issues, strengths and weaknesses of the existing frameworks and gather the key factors and attributes for developing a KM framework (see chapter three). The researcher also learned from the KM practice in NIPOST and the postal strategy plans (2009–2016).

Based on this learning, the researcher developed an adequate plan and methodology to conduct the research. A questionnaire was carefully designed to assist the researcher in obtaining the desired data for the research. Then, the techniques for data collection and analysis were selected (see chapter four).

Based on these analyses, the researcher developed and reviewed (Acting phase) the KMPOST framework (see chapter six) and the KMPOST framework is evaluated (Observing phase) in a real-life working environment in NIPOST (see Chapter seven). A review and reflection on the whole research work is presented in chapter eight. The contributions of the research work, limitations and recommendations for further studies are also presented.

4.2.4 Research Processes

The first step in this research was to gain a better understanding of the current issues of the existing KM frameworks with a view to developing a KM framework for the postal sector, since none has been specifically developed for the sector. Therefore, the starting point in this research was the literature review of the existing KM frameworks and the documents relevant to this research.

The literature review helped the researcher to understand the current issues of the body of knowledge in this particular area of study. It also enabled the researcher to gain a better understanding of the theories, assumptions and focus of the existing KM frameworks in terms of their structure, methodology, components and attributes. It revealed the gaps in the existing frameworks.

The understanding and lessons learned from the existing KM frameworks formed the basis for developing the KM framework for the postal sector.

From the studies carried out, the existing KM frameworks could be classified as technological frameworks, social frameworks or Social-Technical frameworks. The first framework stresses the technological aspects of KM, while the social framework stresses the process or human aspect of KM. The Social-Technical framework stresses the interdisciplinary nature of knowledge management by integrating the technological, process and human issues into a single framework.

This research focuses on social-technical KM frameworks. Five KM frameworks that are considered to be social-technical were selected from the literature review as benchmarks for further analysis. A comparative analysis of the five frameworks was presented in chapter three. Based on the analysis, attributes of the selected frameworks, from the literature review and from the postal strategy plans, were extracted and combined to develop the new KM framework for the postal sector. A survey was conducted to obtain experts' opinion on and perception of the KMPOST framework; the findings are presented in chapter five

4.3 Research Techniques

4.3.1 Data Collection Techniques

When it comes to data collection, a researcher must be willing to use all available sources of evidence including but not limited to questionnaire, interviews, documentation, case study and observation (Beyh, 2004). Therefore, after reviewing a number of the above mentioned data collection techniques, a questionnaire, interviews and case study are considered most appropriate strategies for collecting data in this study.

4.3.1.1 Questionnaire

According to Patel and Davidson (1994), presented methods used for data collection: questionnaires, telephone interviews and personal interviews. This research used questionnaires and personal interviews for data collection.

A questionnaire was used to obtain feedback on KM practice in NIPOST and from KM's experts regarding their opinions on the KM framework (KMPOST). A questionnaire was chosen as a tool for data collection to reach the respondents in a short period of time and in a relatively cost-effective way. This technique has its limitations, but for the reasons stated above, it was the most appropriate method for this data collection. The questionnaire was administered by e-mail to the respondents. Completed questionnaires were also forwarded to the researcher by e-mail within two months.

4.3.1.2 Interviews

The interview method for data collection was used to gain a deep insight into and understanding of certain responses from the respondents. The researcher asked for the respondents' views on specific issues with regard to the completed questionnaire. The interviews lasted for 10–25 minutes with each of the respondents and were documented. The findings of the interviews helped the researcher to improve the development of the KM framework (KMPOST).

4.3.1.3 Case Study

In the case study method, the investigation is limited to a specific event or phenomenon and its relationships. A case study has various advantages, however, they are also criticized for their inability to generalize their results (Yin, 1994).

Yin (2003) states that case study methods can involve single and multiple cases. The former method makes it easy to study an individual entity, business process or organization by itself, without making any comparison with any other entity. The latter has much to do with comparisons, which is why it is referred to

as a multiple-case study. Miles and Huberman (1994) explain that the use of a multiple-case study adds to the richness and validity of the findings. This research is based on a single-case study, as only one organization (NIPOST) is considered.

Case Study 1 Implementation of a KMS in the ICT Department of NIPOST

This case study was conducted to evaluate the efficiency of the KMS developed based on the KMPOST framework to enhance knowledge management practice in the ICT Department of NIPOST (see chapter seven). The ICT Department faces the operational challenges of a high failure rate of implementation of ICT projects in the regional (territories) offices, especially among converted officers (non skilled officers). The KMS was therefore employed to facilitate knowledge sharing between the skilled officers and the converted officers. Further discussion of the operational challenges is presented in detail in chapter seven. The implementation of the KMPOST model in this study focuses on knowledge sharing to enhance staff efficiency and productivity. Both questionnaire and interview techniques for data collection were used.

The questionnaire (see appendix 3) was distributed via e-mail to officers in the territories. This method was chosen as a tool for data collection because of the geographical distance between the researcher and the responders. A total of 32 questionnaires were administered and 28 were completed and returned. A follow-up interview was conducted with all the management staff of the ICT Department at the corporate headquarters. The interviews were recorded and documented.

Case Study 2 Improving the International Postal System's Quality of Service through Knowledge Sharing

This case study evaluated the KMS designed based on the KMPOST framework as a tool for knowledge sharing to improve the quality of service of the International Postal System (IPS) in NIPOST (see chapter seven). The implementation of the IPS in NIPOST is monitored by the International

Operations division. Further discussion of the IPS quality of service is presented in chapter seven. The evaluation in this case study was carried out through a comparative analysis of the quality of service performance of the IPS before the implementation of the KMS (2012) and during the period when the KMS was being implemented (2013). The result of the evaluation is presented in chapter seven.

4.3.1.4 Rating and Weight Value Techniques

The rating of the responses was based on the Likert scale (Easterby-Smith et al., 2002; Openhelm, 1966; Preece, 1994) as this method was believed to be appropriate for this survey due to the nature of the questions asked. In this method, five categories of answers were provided for each question, ranging from either “strongly agree” to “strongly disagree” or “strongly relevant” to “strongly irrelevant”, which were scaled from the most negative towards the most positive response accordingly. It is also understood that the Likert scale is not limited to five categories of answers; however, in the present study, five choices were believed to be the most appropriate.

4.3.1.5 Sampling Techniques

Purposive sampling was employed to administer the questionnaire to the respondents. This sampling technique is also called judgement sampling. In this sampling method, the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of their knowledge or experience (Bernard, 2002; Lewis and Sheppard, 2006).

This technique of sampling is useful when the targeted sample needs to be reached quickly and when sampling for proportionality is not the main concern. This technique was used because the researcher chose the respondents. The advantage of this sampling method is that it permits the researcher to use people who have a good knowledge of the area of interest. However, this sampling technique has its limitations. It is prone to research bias; subjectivity

and the non-probability-based nature of selection of sample representation can be difficult to defend.

4.3.2 Data Analysis Techniques

This research used quantitative and qualitative research techniques for data analysis to help the researcher to obtain the best of both research methods. Both approaches have their strengths and weaknesses and neither approach can be held to be better than the other. The best research method to use for a study depends on that study's research purpose and the accompanying research questions (Yin, 1994).

Quantitative research is often formalized and well structured. It explains phenomena by collecting numerical data that are analysed using mathematical or statistical based methods.

Quantitative data analysis deal with investigation in which numerical data is collected and/or the researcher transforms what is collected or observed into numerical data. Statistical tools are use for data analysis. There are two main branches of statistics: descriptive and inferential. Descriptive statistics is the term given to the analysis of data that helps to describe or summarize the data in a meaningful way. It allows simple interpretation of the data. It does not require inferences and conclusions beyond a sample view of the data analysed. On the other hand, inferential statistics is a technique that allows the use of sample data to make generalizations about the populations from which the samples are drawn.

In this research, statistical tools such as histogram, pie chart are used to show the frequency distribution and mean value, standard deviation, t-test was employed for data analysis. A t-test analysis was carried out using SPSS 17 to test the hypotheses (see chapter five and seven).

Qualitative research, on the other hand, is the search for knowledge that is supposed to investigate, interpret and understand a phenomenon by means of an inside perspective (Yin, 1994). Qualitative research is defined as “an

inductive process of organizing data into categories and identifying patterns (relationships) among categories” (McMillan and Schumacher, 1993).

Techniques for qualitative data analysis include: documentation, categorizing and coding, examining relationship and displaying data, reflexivity, etc. In this research, categorization and examining relationship and displaying of data were employed (see chapter three).

4.3.3 Triangulation

Different techniques for both data collection and data analysis were employed. In the survey, questionnaires and interviews were used to collect data; in addition, quantitative and qualitative techniques for data analysis were utilized to make sure that the final results are of real value to this research. Triangulation methods were employed during the research to test the validity of the data collected. These included the use of multiple sources of data (Berg, 1989; Patton, 1987). Triangulation is based upon the fact that “...no single method ever adequately solves the problem of real life problem, because each method reveals different aspects of empirical reality, multiple methods must be employed and should be used in every investigation” (Denzin, 1978). The use of multiple sources of evidence in research allows an investigator to address a broader range of historical, attitudinal and behavioural issues. Thus, any finding or conclusion in a study is likely to be more convincing and accurate if it is based on different sources of information (Yin, 1994).

4.4 Summary

This chapter discussed the research methodology and the process used to undertake the research.

A number of research strategies and techniques for data collection and analysis were presented. As effective methods for collecting rich and broad-based data, both qualitative and quantitative techniques were used, thereby allowing flexibility in data collection and providing the most appropriate means of

securing rich information concerning the emerging trends and issues within the subject area of the research study.

Furthermore, the scaling and sampling methods that were used in this research were explained. Finally, the use of multiple methods for data collections and analyses increases the robustness of results of the survey.

The next chapters report on the analysis of the data collected. The reports focus on the findings of KM practice in NIPOST, experts' opinion on the knowledge management framework (KMPOST) and the case studies conducted to evaluate the KMS with NIPOST's business processes. Finally, the findings are discussed on both the expert's opinion and the evaluation of the KMS regarding NIPOST's business processes.

CHAPTER FIVE

Data Analysis

5.1 Introduction

This chapter focuses on the description of the analysis of the data obtained from the preliminary research conducted on KM practices in NIPOST and the experts' opinion on and perception of the KMPOST model.

Section one presents the reports of KM practice in NIPOST and discusses the findings of the empirical investigations of the research surveys. The relevant data were collected through questionnaire surveys and face-to-face interviews within NIPOST.

Section two presents the reports of experts' opinion on the new knowledge management framework developed (KMPOST). The survey was conducted using a questionnaire and the findings of the survey are presented in the next section.

5.2 Findings and Analysis of KM Practice in NIPOST

This section discusses the findings and analysis of the surveys on KM practice in NIPOST. This section is divided into four parts.

Part one of the survey asked questions on the awareness of knowledge management among NIPOST staff, part two asked questions on knowledge management practice in NIPOST, part three inquired about the strategy for knowledge management practice in NIPOST and part four is concerned with the benefits of knowledge management to NIPOST.

The main objective of this section is to gain a better understanding of KM practice in NIPOST and help in developing the KM framework for the postal sector. A questionnaire was used as a tool for data collection; however, interviews were also conducted to collect further data, which could not be obtained from the questionnaire survey. Forty-three questionnaires were administered in NIPOST to investigate the current situation of knowledge

management practice in NIPOST and to establish the influence factors and attributes of the knowledge management framework (KMF) that represents the main focus of this research. Thirty nine questionnaire were completed and returned.

The results of both the questionnaire and the interviews conducted are presented in these findings. While the questionnaire survey focused on KM practice in NIPOST, the interviews aimed to find out how the KMS can be improved in NIPOST. In summary, the four key elements examined in the survey questionnaire were:

- (1) Awareness of knowledge management among NIPOST staff
- (2) Knowledge management practice in NIPOST
- (3) Strategy for knowledge management in NIPOST
- (4) Benefits of knowledge management to NIPOST

5.2.1 Awareness of Knowledge Management in NIPOST

In this part, nine questions were asked (see appendix B), which focused on understanding the level of awareness of knowledge management in NIPOST. Figure 5.1 presents the percentage of knowledge management awareness in NIPOST. The survey showed that there is some level of awareness of knowledge management in NIPOST. However, this awareness is predominantly within the management staff. The operational staffs have little or no awareness of knowledge management. For successful implementation of KMS, there is a need for KM awareness at all levels of the organization.

Further data analysis revealed that:

- (i) 50% of the respondents are not sure whether there is a knowledge management system to facilitate knowledge management practice in NIPOST.
- (ii) 39.46% are not sure whether NIPOST staffs properly understand the concepts of a knowledge management system as a tool for enhancing organization performance and staff productivity.

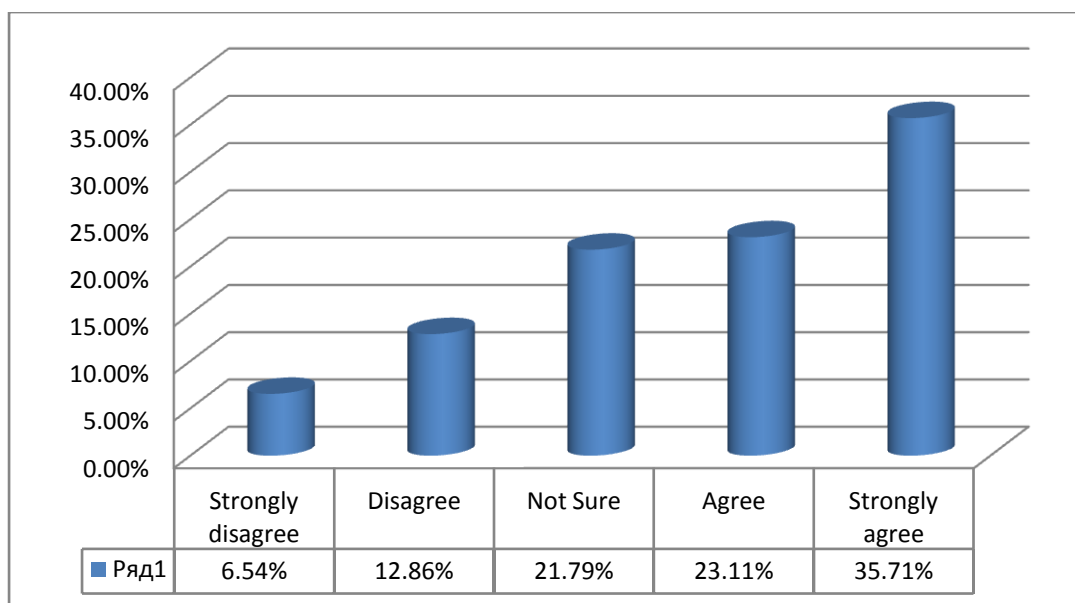


Figure 5.1 Overall percentage of knowledge management awareness in NIPOST

The low level of understanding of the concepts of KM, especially among the operational staff, is contributed to the low participation in knowledge management practice in NIPOST. Further investigation of the low participation level in the KM during the interview sessions revealed the following:

1. A lack of structured training focusing on knowledge management in the organization
2. A lack of an organizational philosophy for knowledge management
3. A lack of a management policy on knowledge management
4. A public sector approach towards information and knowledge management
5. A lack of cross-departmental and sectional meetings aimed at promoting knowledge sharing.

5.2.2 Knowledge Management Practice in NIPOST

In part two, thirteen questions (see appendix B) were asked, attempting to understand how NIPOST currently practises knowledge management. Regarding the KM practice, this survey focused on how knowledge is created and shared and how these can be encouraged in NIPOST. The result of the survey is presented in figure 5.2.

The survey found that there is no central repository for knowledge storage in NIPOST. Knowledge generated in NIPOST is stored as hard documents and shared as memos or reports of meetings. Furthermore, in most situations, such documents do not reach the staff members who need this knowledge at an appropriate time. Thus, there is no free flow of knowledge across the organization.

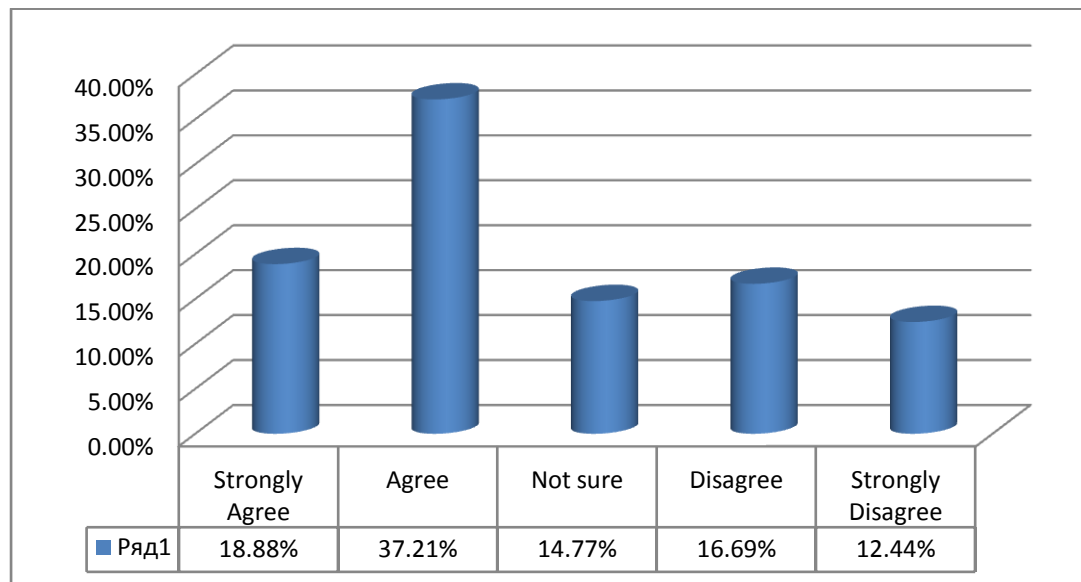


Figure 5.2 Knowledge management practice

Further data analysis revealed that 52.5% of knowledge creation in NIPOST is generated through departmental meetings. However, knowledge creation through communities of practice and informal meetings is not considered in NIPOST.

Further investigation during the interview sessions revealed the following:

- (1) There is no structure supporting and promoting the knowledge management.
- (2) There is no knowledge management team to drive the knowledge management initiatives in NIPOST.
- (3) There is no framework for knowledge management implementation.
- (4) Knowledge management is yet to be institutionalized; it is still personalized. Knowledge resides with individuals.
- (5) Strong leadership support for knowledge management is lacking.

Figure 5.3 shows the results on knowledge sharing. The survey revealed that knowledge sharing is carried out via hard and electronic documents. There is no technology deployed to facilitate knowledge sharing. Knowledge does not reach the right people at the right time. At most times, knowledge is shared among the managers, while knowledge sharing among the operational staff is not considered serious. That is, the operational staff, who need knowledge on the policies, products, services and directions of the organization to enhance their daily work, do not have timely access to the desired knowledge.

Knowledge generated through departmental meetings is not widely circulated. The operational staffs are not actively involved in such knowledge creation and sharing.

The survey also revealed that knowledge management sharing in NIPOST is promoted through training and manpower development. However, the concepts of communities of practice and collaborative work are not strongly practised.

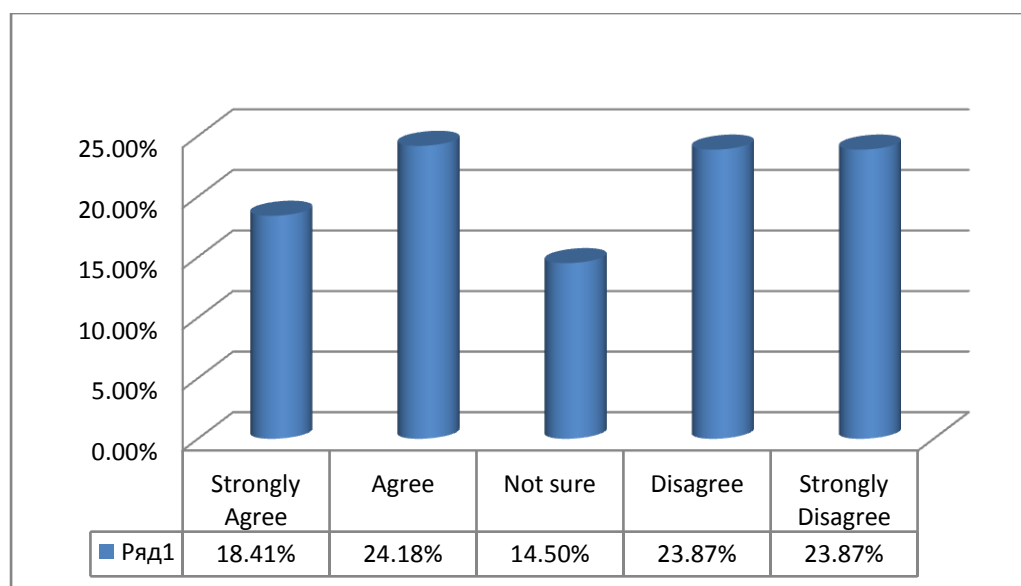


Figure 5.3 Knowledge sharing in NIPOST

From the investigation during the interviews, the causes of the low level of knowledge sharing in NIPOST can be summarized as follows:

- (1) A lack of inadequate technology to facilitate knowledge sharing.

- (2) The cultural attitudes of staffs of the organization towards change.
- (3) An inadequate change management plan and strategy to encourage knowledge sharing.

5.2.3 Strategic Focus of Knowledge Management in NIPOST

In part three, eleven questions (see appendix B) centred on the understanding of the strategies employed by NIPOST in implementing knowledge management. Figure 5.4 shows the results on the strategic focus of knowledge management practice in NIPOST. About 70% of the respondents do not know the strategy focus and direction of knowledge management in NIPOST. That is, the organization does not have a clear knowledge management policy. The true value that knowledge management brings to individuals, teams and the organization as a whole is not clearly defined.

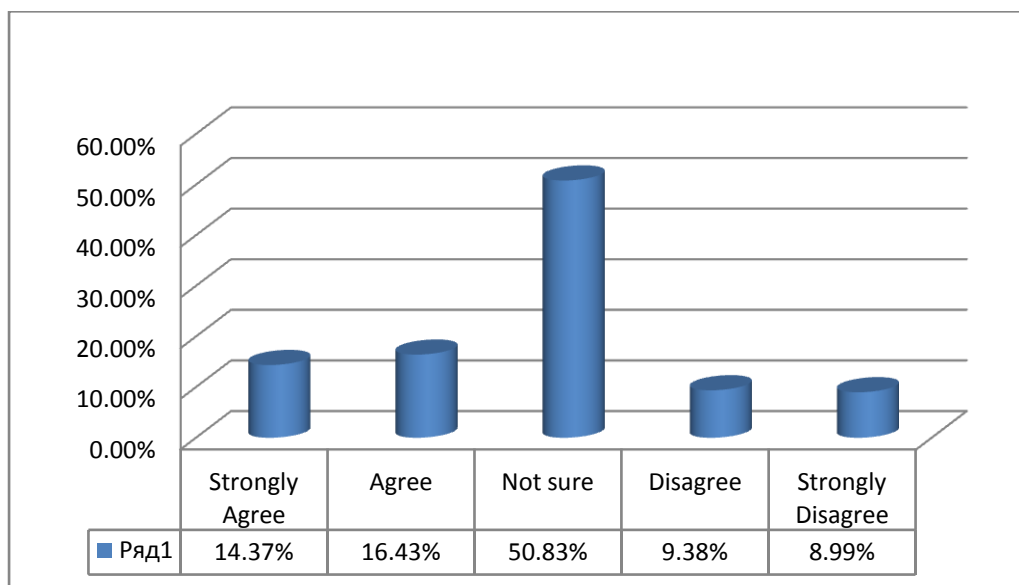


Figure 5.4 Strategy focus of knowledge management in NIPOST

The findings from the interview sessions on the strategy for KM in NIPOST can be summarized as follows:

- (1) There is no strong management support for knowledge management in NIPOST.

- (2) There is no link between business strategy and knowledge management strategy.
- (3) The business processes do not promote knowledge management practice.
- (4) There is no budgetary allocation for knowledge management activities.
- (5) There is no reward or motivation system in place to encourage knowledge management.
- (6) There is no clear strategic direction to knowledge management.

5.2.4 Benefits of Knowledge Management to NIPOST

In the last part, ten questions (see appendix B) centred on understanding the benefit of implementing knowledge management in NIPOST. Figure 5.5 shows the results on the importance of knowledge management to NIPOST. Even though the staffs generally accept that knowledge management brings benefits to an organization, NIPOST has not defined the benefits that it could derive from a knowledge management system. The success of the knowledge management system in this organization therefore cannot be determined yet. Further analysis of the staff thinking on the importance of knowledge management to NIPOST revealed that:

- (1) 23.98% believe that it would improve the customer relationship.
- (2) 53.33% believe that it would increase the staff's ability to capture knowledge within and outside the organization.
- (3) 53.02% believe that it would improve staff involvement in the workplace.
- (4) 56.29% believe that it would prevent reinvention of the wheel and duplication of effort.

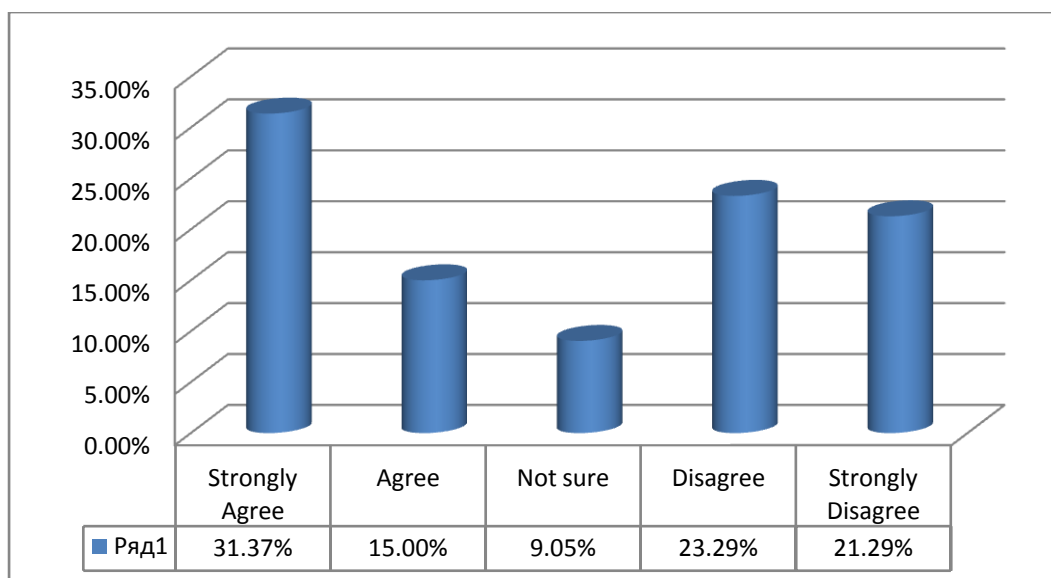


Figure 5.5 Importance of knowledge management to NIPOST

From the findings and analysis of the survey, the summaries of the challenges of KM practice in NIPOST are:.

- (1) The inadequate awareness of the concept of KM at all levels of employees in the organization
- (2) The lack of organizational policy and structure for KM
- (3) The lack of training on KM and a KM team to promote KM
- (4) The lack of a motivation and reward system for KM practice
- (5) The lack of budgetary allocation for KM activities
- (6) The lack of clear objectives or goals for KM implementation
- (7) The inadequate IT infrastructure for KM activities

5.3 Experts' Opinion on and Perception of the KMPOST Framework

This section presents the analysis and findings of the experts' opinion on and perception of the Knowledge Management Framework for the Postal Sector (KMPOST). To achieve this objective, a questionnaire was used as a tool for data collection. The questionnaire was made up of three parts:

Part A consisted of ten questions (see appendix A). It obtained data on respondents' understanding, involvement and experiences of KM practice. It

also determined the respondents' organization location and willingness to be contacted for further investigation.

Part B consisted of eleven questions (see appendix A). It obtained data on the acceptability of the proposed framework as an improved KM framework. Questions were asked to find out whether the factors and attributes are considered critical for a successful implementation of KM. The questionnaire also found out whether the concepts of learning, system thinking, critical information and human creativity are accepted as key factors for KM implementation.

Part C consisted of six questions (see appendix A). Questions were asked to ascertain the importance or relevance of the attributes of each of the components of the KM framework (KMPOST). For each of the questions in parts B and C, a Likert scale was used (5 = strongly agree, 4= agree, 3= not sure, 2= disagree and 1= strongly disagree).

The aim of this survey could be summarized as being to answer the following questions:

- (1) Is the KMPOST framework an improvement on the existing KM framework?
- (2) Are the factors of the KMPOST framework acceptable?
- (3) Are the attributes of the factors of the KMPOST framework considered as critical to influence the successful implementation of the KMS?

The targeted respondents were determined from the literature review and were those individuals who have contributed to knowledge on KM frameworks in one way or another. Sixty copies of the questionnaire were administered to these individuals via e-mail. Thirty-one were completed and returned. The response rate was 55%. This low response rate may be attributed to the disadvantages of using a questionnaire as a tool for data collection.

This research explored descriptive and inferential statistical tools to analyse the data collected and interpret the observations. Descriptive statistical tools, such as histograms, pie charts, mean values and standard deviation, were employed

to summarize the data collected. Inferential statistics were employed to test the acceptability of the KMPOST model to the respondents. The analysis of the completed questionnaires is shown in the next section.

5.4 Findings and Analysis of Expert's opinions and perceptions

5.4.1 Section A: Respondents' Background

This section presents the respondents' background as regards their geographical distribution and organization.

Q1: Where is your organization located?

Table 5.1 presents the geographical distribution of the respondents and shows that Africa has the highest number. This is represented in the pie chart in figure 5.6.

Table 5.1 Distribution of the respondents according to regions

Region	No. of Respondents	Percentage
United Kingdom (UK)	6	19.35%
United States of America (USA)	7	22.58%
Asia	5	16.13%
Africa	13	41.94%
Total	31	100%

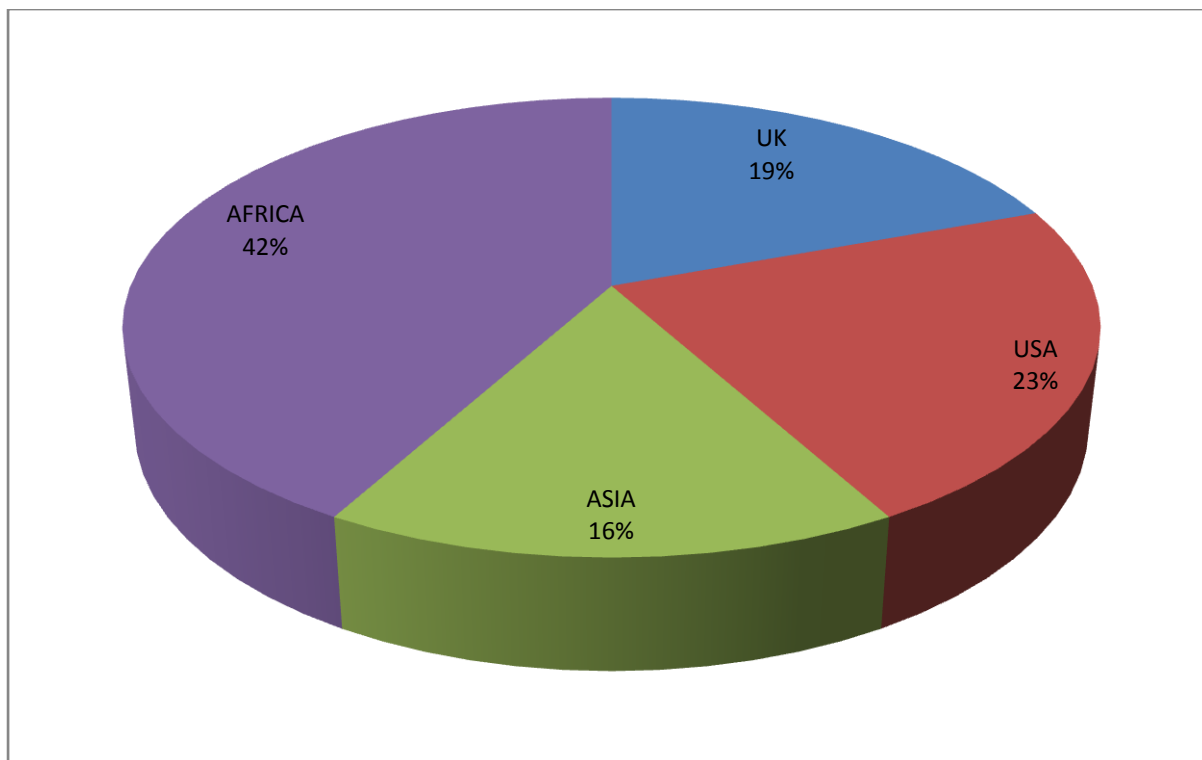


Figure 5.6 Distribution of the respondents according to regions

Question 2 attempted to find out which kind of organization employs the respondents.

Q2. Your organization can be classified as:

The distribution of respondents according to the kind of organization is presented in table 5.2. Most responses came from the academic world. This is represented in the pie chart in figure 5.7.

Table 5.2 Distribution of the respondents according to organizations

Organization	No. of Respondents	Percentage
Academic	9	29.03%
Government	6	19.35%
Private sector	7	22.58%
Consultancy	8	25.81%
Other	1	3.23%
Total	31	100%

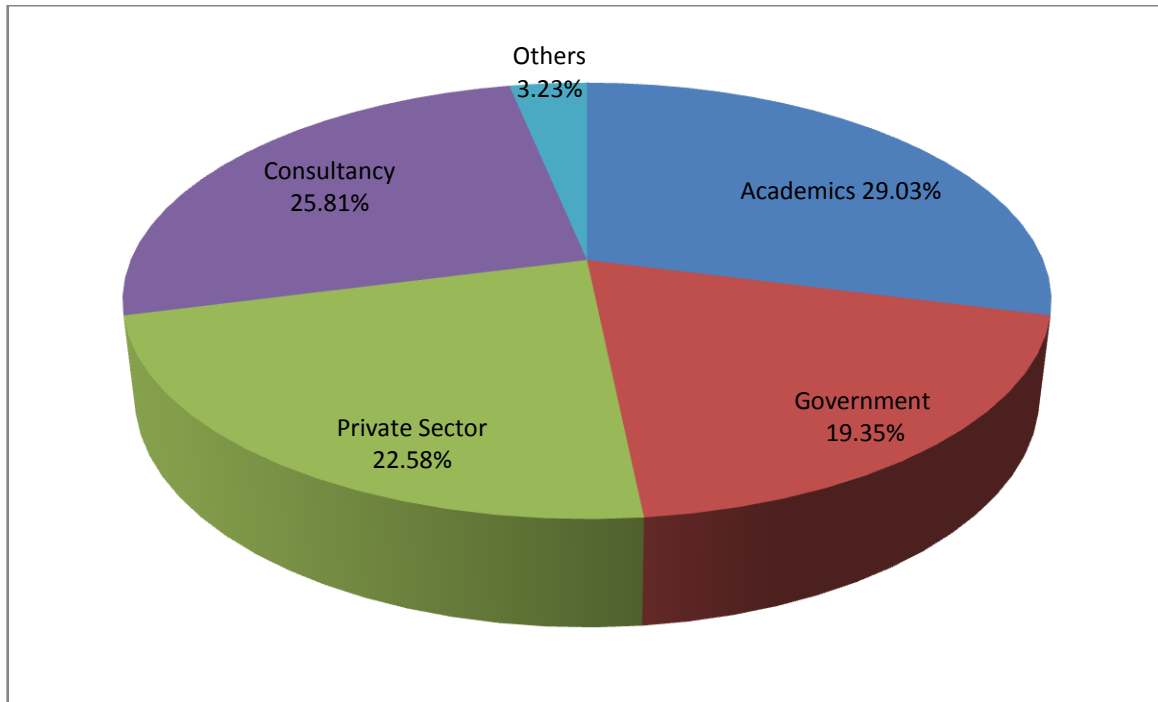


Figure 5.7 Respondents according to organizations

Source: Respondent survey, 2012

5.4.2 Section B: Acceptability of the KMPOST Model

This section sought the opinions and perceptions of the respondents regarding whether the framework (KMPOST) is truly an improvement to the existing KM frameworks and whether the respondents agree with the concepts introduced in the new framework as critical factors for the successful implementation of the KMS. These concepts include organizational philosophy, learning, system thinking, critical information and human creativity. The framework, takes into consideration the technological, knowledge, human and social issues of knowledge management. To obtain the opinions of the respondents, eleven questions, Q1 to Q11 (see appendix A), which centred on the factors of the KMPOST model, were asked. For each of the attributes, a five-point Likert scale was used, ranging from strongly agree to strongly disagree. The general opinions of the respondents on the KM framework (KMPOST) as analysed from the completed questionnaire are represented in figure 5.8. The diagram shows the following:

Strongly Agree (SA) – 55.29%

Agree (A) – 42.06%

Not Sure (NS) – 0.29%

Disagree (D) – 2.35%

Strongly Disagree (SD) – 0%

This result shows that about 97.35% (SA and A) of the respondents accept the framework as a social-technical KMS framework.

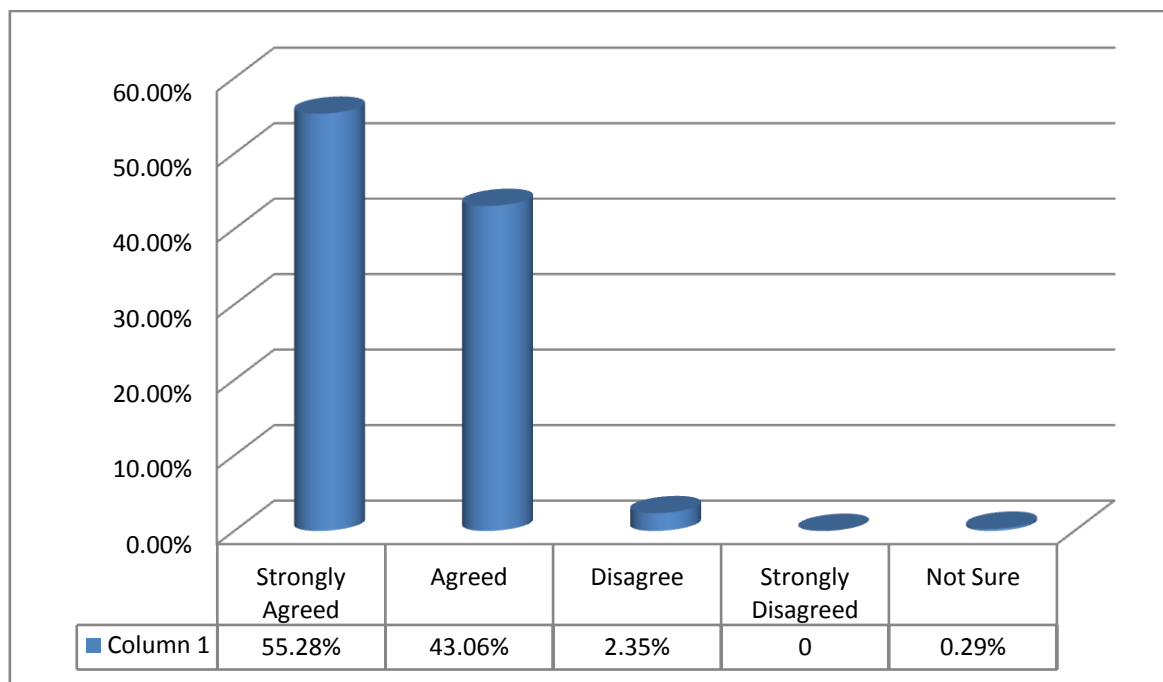


Figure 5.8 Bar chart representing the opinion of respondents on the acceptability of the KMPOST framework

Source: Respondents survey, 2012

5.5 Section B: Acceptability of the Concept of the Proposed KMS Framework

To determine the respondents' opinions on each of the questions in table 5.3 concerning the concept of the KM framework (KMPOST), two statistical tools were used: the mean value of the Likert scale and the one-sample t-test. The computation of these statistical tools is presented in table 5.3.

Mean value: The mean value for the 5-point Likert scale is 3.00. The opinion of the respondents on each of the questions in Table 6.3 is considered to be “accepted” if the mean value of the responses is above 3.00. It is considered to be “rejected” if the mean value of the responses is 3.00 and below.

Table 5.3 shows that all the attributes in this section have a mean value above 3.00. This implies that all the questions on the concepts of the KMPOST framework were accepted.

Even though all the items were accepted by the respondents, some have higher mean scores than others. For example, attribute 6 (knowledge management and learning are critical factors for organizational long-term survival) has the highest mean value of 4.94. This means that today’s KMS should consider the concept of learning as a key factor in the KM framework. That is, learning and knowledge management should be combined into a single KM framework for organizational long-term survival. Attribute 3 (culture influences the practices of KMS in an organization) has the lowest mean value of 3.52.

Table 5.3 Mean, standard deviation and t-test analysis of the opinion of the respondents on the KMPOST model

S/NO	Attributes	Mean	Std Deviation	T	P	Decision
1	An integrated KMS is the best approach in today’s dynamic business environment	4.68	.475	54.80	.000	Significant
2	The KMS principle and concept should be embedded into the organizational philosophy	4.52	.508	49.49	.000	Significant
3	Culture influences the practice of KMS in an organization	4.29	.783	30.51	.000	Significant
4	The proposed KMS framework takes into consideration the key factors of KMS practice	4.32	.475	50.64	.000	Significant
5	Learning should be an integral part of the KMS framework, because knowledge management is a continual process of incremental improvement and evolution and not a	4.84	.374	72.05	.000	Significant

	one-time effort					
6	Knowledge management and learning are critical factors for organizational long-term survival	4.94	.250	110.03	.000	Significant
7	System thinking is important for a KMS framework because it facilitates the linkage between the KM initiative and the strategic goals and objectives of an organization	4.65	.486	53.17	.000	Significant
8	Utilization of the principle of actionable information, dynamic thinking and human creativity enhances the level of efficiency of KMS practice in an organization	4.39	.495	49.33	.000	Significant
9	Competitive advantage, innovation and efficiency are the key benefits of implementing a KMS in an organization	4.39	.495	49.33	.000	Significant
10	The components of an integrated KMS should be a human–social system, technological system and knowledge system	4.65	.608	42.52	.000	Significant
11	The proposed framework truly is an integrated KMS framework	4.29	.461	51.77	.000	Significant

Source: Calculated t-test for the respondent survey, 2012

One-sample t-test: Table 5.3 presents the mean, standard deviation and one-sample t-test analysis of the opinion of the respondents on each of the questions regarding the concept of the KM framework (KMPOST). The calculated t-values for the questions are 54.80, 49.49, 30.51, 50.64, 72.05, 110.03, 53.17, 49.33, 49.33, 42.52 and 51.77, respectively.

Hypotheses

H₀: There is no significant difference between the opinion of those who accept and the opinion of those who reject the concepts of the KMPOST model.

H_a: There is a significant difference between the opinion of those who accept and the opinion of those who reject the concept of the KMPOST model.

All the items were significant at the 0.05 level of confidence. This indicates that there is a significant difference in favour of those who accept the KMPOST model at $P < 0.05$.

As shown in table 5.3, each of the questions was accepted as a critical factor for a social – technical KM framework.

5.6 Section B: Acceptability of the KMPOST Model Using the t-Test

To determine the general opinion of the respondents on “acceptance” or “rejection” of the KMPOST model as social - technical KM framework, a paired t-test was applied.

To achieve this, the responses were divided into two groups. The first is the “acceptance” group (strongly agree and agree) and the second is the “rejection” group (not sure, disagree and strongly disagree). The aim was to compare the mean values of the two groups to determine whether the general opinions of the respondents on the proposed framework are to “accept” or “reject” it. The t-test analysis is shown in table 5.4:

Table 5.4 Paired-samples statistics

	Mean	N	Std Deviation	Std Error Mean
Pair 1 Agree	44.3455	11	3.95129	1.19136
Disagree	1.0264	11	2.00158	.60350

Hypotheses

H₀: There is no significant difference in the opinions of the respondents on the acceptability of the framework (KMPOST).

H₁: There is a significant difference in the opinions of the respondents on the acceptability of the framework (KMPOST).

To test these hypotheses, the mean, standard deviation and t-test were used and the result is presented in table 5.5.

Table 5.5 T-test of the opinion of the respondents on the acceptability of the KMPOST framework

<i>Group</i>	<i>N</i>	<i>Df</i>	<i>Mean</i>	<i>SD</i>	<i>T</i>	<i>Sig. (2-tailed)</i>
Agree	11		44.35	3.95		
		10				
					24.907 [*]	0.00
Disagree	11		1.03	2.00		

NS –Not significant ($p>0.05$)

Table 5.5 indicates the mean score of those who agree and those who disagree with the KMPOST framework. The mean scores for the respondents who agree and disagree are 44.35 and 1.03, respectively. The “agree” mean scores differ significantly from the “disagree” mean scores regarding the acceptability of the KMPOST framework ($t = 24.907$; $df=10$, $p < 0.05$).

This indicates that there is a significant difference in the opinions of the respondents on the acceptability of the framework. Therefore, the null hypothesis, which states that there is no significant difference in the opinions of the respondents on the acceptability of the KMPOST framework, is rejected.

This implies that the respondents accept the KMPOST framework as an improved social - technical KM framework. This is clearly seen in the mean score of those who agree, which is 44.35, compared with the mean score of those who disagree, which is 1.03. Given this conclusion, the KMPOST

framework is generally accepted by the respondents as social - technical KM framework with more comprehensive attributes.

5.7 Section C: Perception of the Attributes of the Factors of the KMPOST framework

The framework (KMPOST) includes three sub-systems in the core layer: technological, human–social and knowledge. The attributes that influence the success of these factors were identified and presented. This section asked the respondents to rate the attributes of the factors in terms of their importance.

The mean score of the Likert scale is used to consider the responses as “important” or “not important”. The mean score of the 5-point Likert scale is 3.00. This means that all the attributes with a mean value above 3.00 are considered as “important”, while items with a mean value of 3.00 and below are considered as “not important”. Furthermore, a one-sample t-test analysis for each of the attributes is presented at the 0.05 level of confidence as a decision rule to determine whether the attribute is “important” or “not important”.

5.7.1 Technological System

The technological system concentrates on attributes of the technological aspects of the knowledge management. The main focus is on the collection, codification, storage, communication and manipulation of knowledge using the technical system. The KMPOST framework presents 16 attributes that influence the success of the technological system of an integrated KM framework. Question (a) to question (p) focus on the importance of these attributes in the KMPOST model (see appendix A). The respondents’ responses to these are presented in figure 5.9, which shows that 59.86% of them consider the attributes to be very important (VI), 32.8% important (I), 4.24% less important (LI) and 0.9% not important (NI).

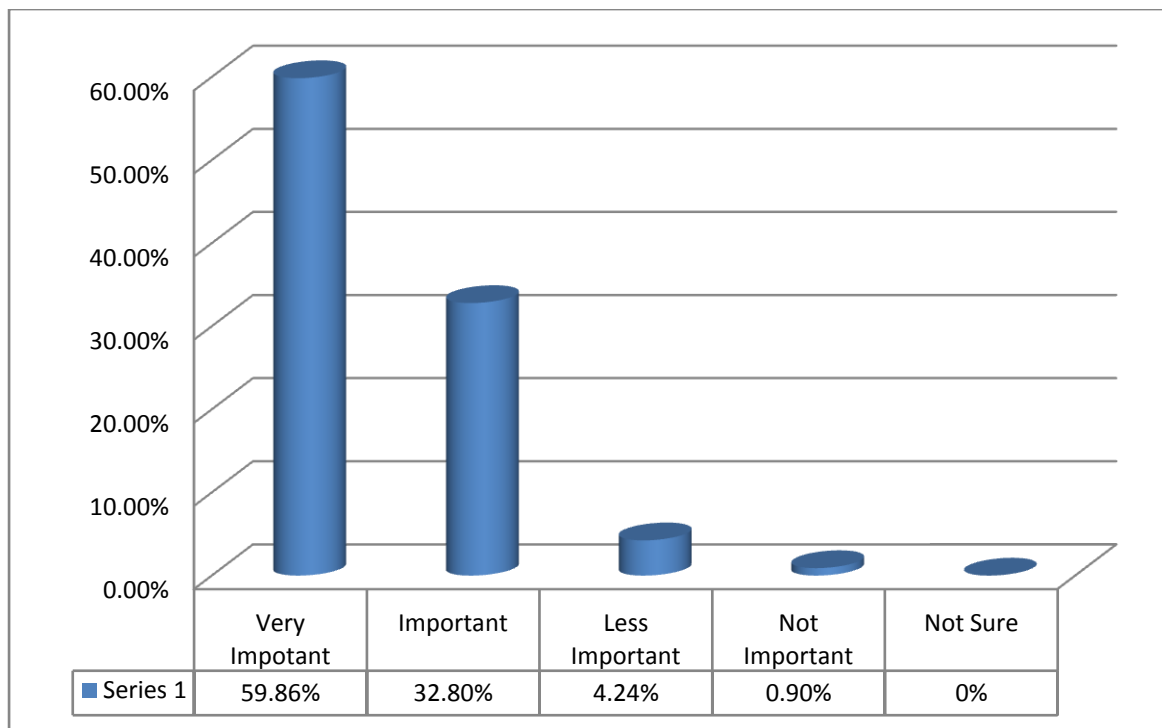


Figure 5.9 Perception of the respondents of the technological system attributes of the KMPOST framework

Source: Respondent survey, 2012

In table 5.6, the mean scores of the attributes of the technological system are above 3.00. This means that the respondents consider all the attributes to be important and critical variables that influence the success of the technological sub-system of a KM framework. However, the mean values of the attributes vary. Some have a higher mean value than others. Certain attributes are considered more important than others. For example, security (4.81), information flow (4.74) and infrastructure (4.74) have higher mean values, while accessibility has the lowest mean value.

Table 5.6 One-sample t-test analysis of the opinions of the respondents on the technological system

S/No	Attributes	Mean (x)	Std Deviation	T	P	Decision
.						
A	Infrastructure	4.74	.445	59.36	.000	Significant
B	Technological solutions	4.58	.495	51.87	.000	Significant

C	Data management	4.55	.624	40.59	.000	Significant
D	System functionality	4.45	.620	41.11	.000	Significant
E	Interoperability	4.26	.575	41.20	.000	Significant
F	System integration	4.65	.486	53.18	.000	Significant
G	Scalability	4.39	.667	36.61	.000	Significant
H	Cost-effectiveness	4.65	.486	53.18	.000	Significant
I	User-friendliness	4.42	.672	36.62	.000	Significant
J	Accessibility	4.10	1.033	21.56	.000	Significant
K	Security	4.81	.402	66.64	.000	Significant
L	Information flow	4.74	.445	59.36	.000	Significant
M	Architecture	4.47	.575	45.88	.000	Significant
N	Multi-media	4.71	.461	56.83	.000	Significant
O	Web-based solution	4.29	.643	37.18	.000	Significant
P	Agent-based system	4.68	.599	43.46	.000	Significant

Table 5.6 presents the mean, standard deviation and t-test analysis of the opinions of the respondents on the attributes of the technological system. The calculated t-values are: 59.36, 51.87, 40.59, 41.11, 41.20, 53.18, 36.61, 53.18, 36.62, 21.56, 66.64, 59.36, 45.88, 56.83, 37.18 and 43.46 for items A–P, respectively.

H_0 : There is no significant difference between the opinions of those who accept and the opinions of those who reject the attributes of the technological system.

H_a : There is a significant difference between the opinions of those who accept and the opinions of those who reject the attributes of the technological system.

The calculated t-values show that all the attributes are significant at the 0.05 level of confidence. Hence, H_a is accepted, which indicates that there is a statistically significant difference in favour of those who accept all the attributes in the technological system at $P < 0.05$. This means that the respondents view all

the attributes as important for the technological system of an integrated KM framework.

5.7.2 Human–Social System

The human–social system puts more emphasis on human, organizational and cultural issues in implementing the knowledge management system. The starting point here is that knowledge is personal in nature. That is, knowledge resides primarily in the minds of individuals and in the social interaction of these individuals. The focus of the human–social system is on the management of people, processes and culture. The framework (KMPOST) identifies 16 attributes for the human–social system. In the research, 16 questions, question (a) to question (p), were asked to determine the importance of these attributes (see appendix A). The respondents rated these attributes in terms of their importance, as shown in figure 5.10.

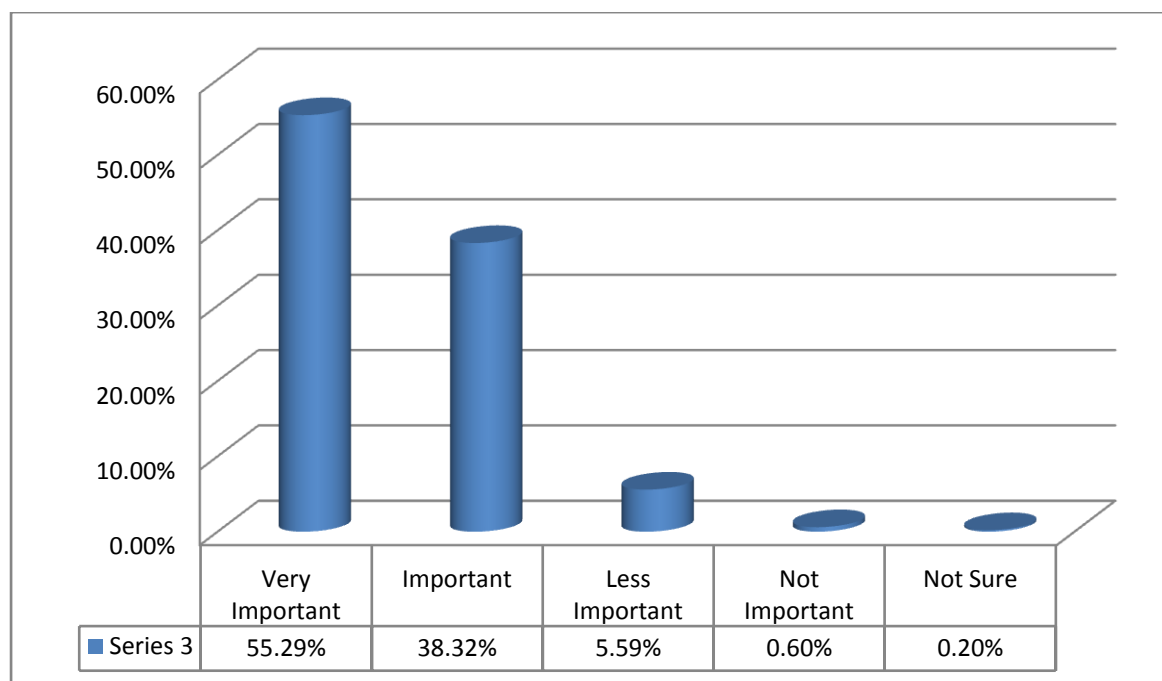


Figure 5.10 Opinion of the respondents on attributes in terms of their importance to the human–social system of the KMS

Figure 5.10 shows that 55.29% of the respondents consider the attributes to be very important (VI), 38.32% important (I), 5.59% less important (LI), 0.6% not important (NI) and 0.20% not sure.

Table 5.7 shows that the mean scores of the respondents for all the attributes of the human–social system are above 3.00.

Based on this decision rule, all the attributes presented in the human–social system of the KMPOST framework are considered by the respondents as important.

Attribute G has a high mean score of 4.81. The respondents consider education and training as the highest critical success attributes of the human–social system for effective implementation of a KMS in an organization. Attribute E has a mean value of 4.71, that is, the respondents are of the opinion that a stakeholder forum is crucial to the success of KMS implementation. In any KM project, all the stakeholders need to be identified and need to communicate effectively for the success of the KMS. Attribute L has a mean score of 4.10. The respondents are of the view that, despite the fact that business re-engineering is important in enhancing organizational operational efficiency, it is considered less important to the human–social system of a KMS in this survey.

Table 5.7 One-sample t-test, mean and standard deviation analysis of the opinion of the respondents on the human–social system

S/No.	Statement	Mean (x)	Std Deviation	T	Sig. (2-tailed)	Decision
A	Experimentation	4.33	.615	38.89	.000	Significant
B	Diversity	4.23	.845	27.85	.000	Significant
C	Adaptability	4.68	.475	54.81	.000	Significant
D	Change management	4.42	.672	36.62	.000	Significant
E	Stakeholder forum	4.71	.461	56.83	.000	Significant
F	Environmental analysis	4.35	.709	34.18	.000	Significant
G	Education and training	4.81	.543	49.30	.000	Significant
H	Collaboration	4.63	.541	48.16	.000	Significant

I	Communication	4.81	.301	90.84	.000	Significant
J	Psychology	4.39	.715	34.14	.000	Significant
K	Self-leadership	4.45	.506	49.00	.000	Significant
L	Re-engineering	4.10	.597	38.18	.000	Significant
M	Networks of experts	4.68	.475	54.81	.000	Significant
N	Content and context	4.21	.749	31.17	.000	Significant
O	Alignment	4.39	.558	43.74	.000	Significant
P	Government policy	4.42	.958	25.68	.000	Significant

Table 5.7 presents the mean, standard deviation and t-test analysis of the opinions of the respondents on the attributes of the human–social system. The calculated t-values for the items are: 38.89, 27.85, 54.81, 36.62, 56.83, 34.18, 49.30, 48.16, 90.84, 34.14, 49.00, 38.17, 54.81, 31.17, 43.74 and 25.68 for A–P, respectively.

H_0 : There is no significant difference between the opinions of those who accept and the opinions of those who reject the attributes of the human–social system.

H_a : There is a significant difference between the opinions of those who accept and the opinions of those who reject the attributes of the human–social system.

The calculated t-values show that all the attributes are significant at the 0.05 level of confidence. Hence, H_a is accepted, that is, there is a statistically significant difference in favour of those who accept all the attributes in the human–social system at $P < 0.05$. This indicates that the respondents consider all the attributes of the human–social system as important for the KMPOST framework.

5.7.3 Knowledge System

The knowledge sub-system focuses more on how knowledge, both explicit and tacit, is created, shared and utilized. This is opposed to simply focusing on how explicit knowledge is created, shared and stored in an organization. The knowledge system emphasizes that to improve and encourage innovation, an organization must understand how both tacit and explicit knowledge are created, shared and utilized across the entire organization. That is, an organization must understand what knowledge it requires. It must identify the sources of the knowledge and the knowledge limitations in the organization. Once the limitations have been identified, a clear understanding of how to manage the limitations will emerge. The knowledge system also looks at issues of motivation and budgeting for knowledge management, integrating knowledge goals with organizational goals and the strategy to be adopted in implementing the KMS.

Thus, the KMPOST framework presents 16 attributes for the knowledge system. These attributes are considered critical success factors for the knowledge system implementation of a KMS. A total of 16 questions, question (a) to question (p), were asked to determine the importance of these attributes to the knowledge system of the KMPOST framework (see appendix A). From the bar chart in figure 5.11, it can be clearly seen that 60.20% of the respondents consider the attributes as very important (VI), 35.56% as important (I), 4.24% as less important (LI), 0% as not important and 0% as not sure.

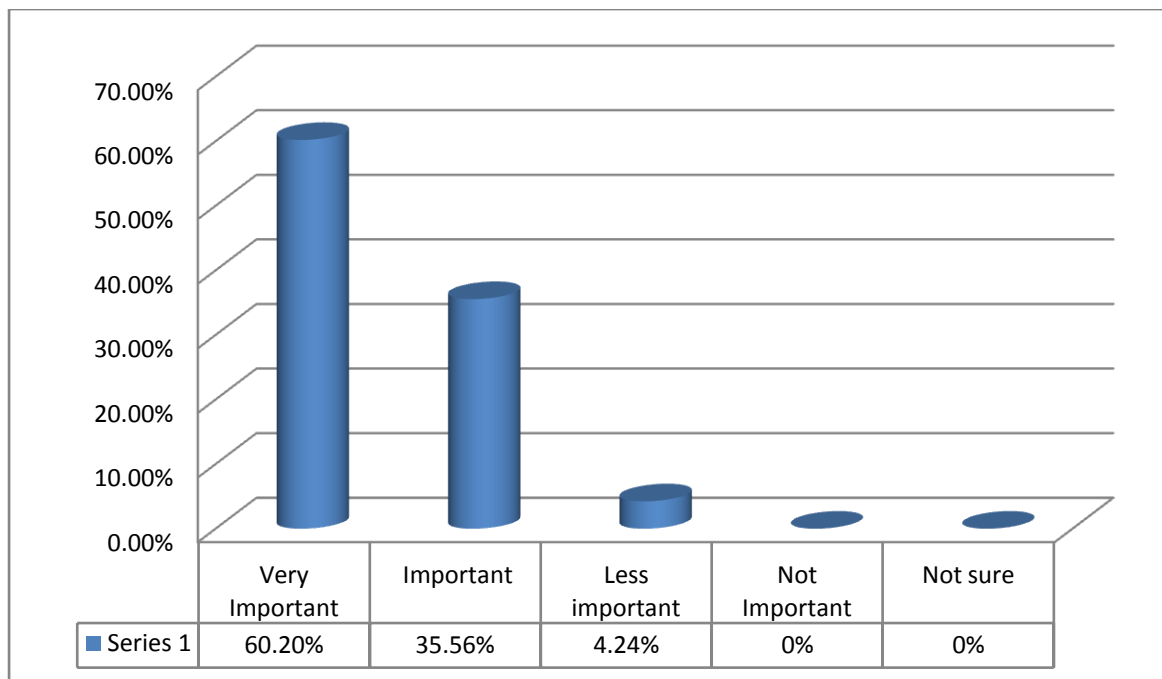


Figure 5.11 Opinion of the respondents on the importance of the attributes to the knowledge system of the KMS

From Table 5.8, it is apparent that the mean scores of all the attributes of the knowledge system are above 3.00. Therefore, based on the decision rule, all the attributes are accepted by the respondents as important. However, their mean values vary. Attribute F has the highest mean value of 4.87, which means that the respondents consider the integration of the knowledge system into organizational daily processes, products and services as a very critical success attribute for effective implementation of the KMS. The second-highest attribute is trust. As discussed earlier, when there is trust, people are willing to share their knowledge.

Table 5.8 One-sample t-test analysis of the opinion of the respondents on the knowledge system

S/No.	Attributes	Mean (x)	Std Deviation	T	Sig. (2-tailed)	Decision
A	Institutionalism	4.61	.558	45.99	.000	Significant
B	Functionality	4.65	.608	42.53	.000	Significant

C	Mission	4.55	.568	44.59	.000	Significant
D	Strategy	4.45	.624	39.73	.000	Significant
E	Sponsorship	4.35	.709	34.18	.000	Significant
F	Integration	4.87	.341	79.58	.000	Significant
G	Trust	4.71	.461	56.83	.000	Significant
H	Motivation	4.50	.486	53.18	.000	Significant
I	Budget	4.58	.568	44.59	.000	Significant
J	Organizational structure	4.58	.502	50.84	.000	Significant
K	Documentation	4.35	.570	43.81	.000	Significant
L	Organizational culture	4.39	.558	43.74	.000	Significant
M	Knowledge template	4.55	.624	40.59	.000	Significant
N	Commitment	4.67	.475	54.81	.000	Significant
O	Measurement	4.29	.643	37.18	.000	Significant
P	Data protection and privacy	4.58	.672	37.95	.000	Significant

Source: Respondent survey, 2012

Table 5.8 presents the mean, standard deviation and t-test analysis of the opinions of the respondents on the knowledge system. The calculated t-values of the items are: 45.99, 42.53, 44.59, 39.73, 34.18, 79.58, 56.83, 53.18, 44.59, 50.84, 43.81, 43.74, 40.59, 54.81, 37.18 and 37.95 for A–P, respectively.

H_0 : There is no significant difference between the opinions of those who accept and the opinions of those who reject the attributes of the knowledge system.

H_a : There is a significant difference between the opinions of those who accept and the opinions of those who reject the attributes of the knowledge system.

From the calculated t-values, all the attributes are significant at the 0.05 level of confidence. Hence, H_a is accepted, which indicates that there is a statistically significant difference in favour of those who accept all the attributes of the

knowledge system at $P < 0.05$. This indicates that the respondents consider all the attributes of the knowledge system as important for the KMPOST framework.

5.8 Relationship between Human–Social, Technological and Knowledge Systems

In view of the positive outcome of the respondents' perceptions concerning the attributes of the three components of the core layer of the new framework (KMPOST), scatter diagrams are explored as a statistical tool to show the relationship of the respondents' perceptions of the human–social and technological systems with the knowledge system. To establish this relationship, the knowledge system is assumed to be the dependent variable (y-axis), while the human–social and technological systems are the independent variable (x-axis).

The scatter diagrams are presented in figures 5.12 and 5.13. In figure 5.12, the knowledge system is assumed as the dependent variable and the technological system is the independent variable. In figure 5.13, the knowledge system is the dependent variable and the human–social system is the independent variable. Both diagrams show a positive relationship. However, figure 5.13 shows a stronger positive relationship between the human–social system and the knowledge system.

The relationships in the scatter diagrams further affirm that a hybrid approach to knowledge management is the most appropriate. That is, while many KMSs have been made possible by technology, the IT-centric approach has had limited success, whereas human–social approaches have been more successful in turning knowledge into action.

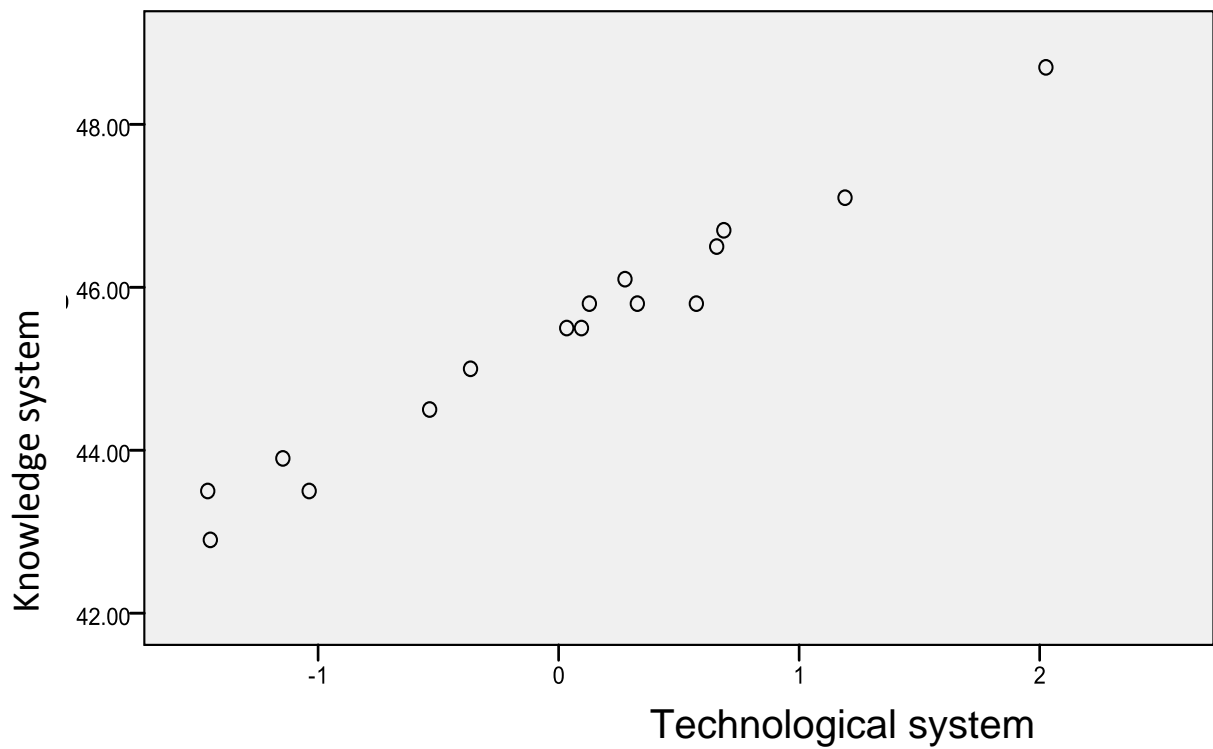


Figure 5.12 Relationships of the respondents' perceptions of the knowledge and technological systems

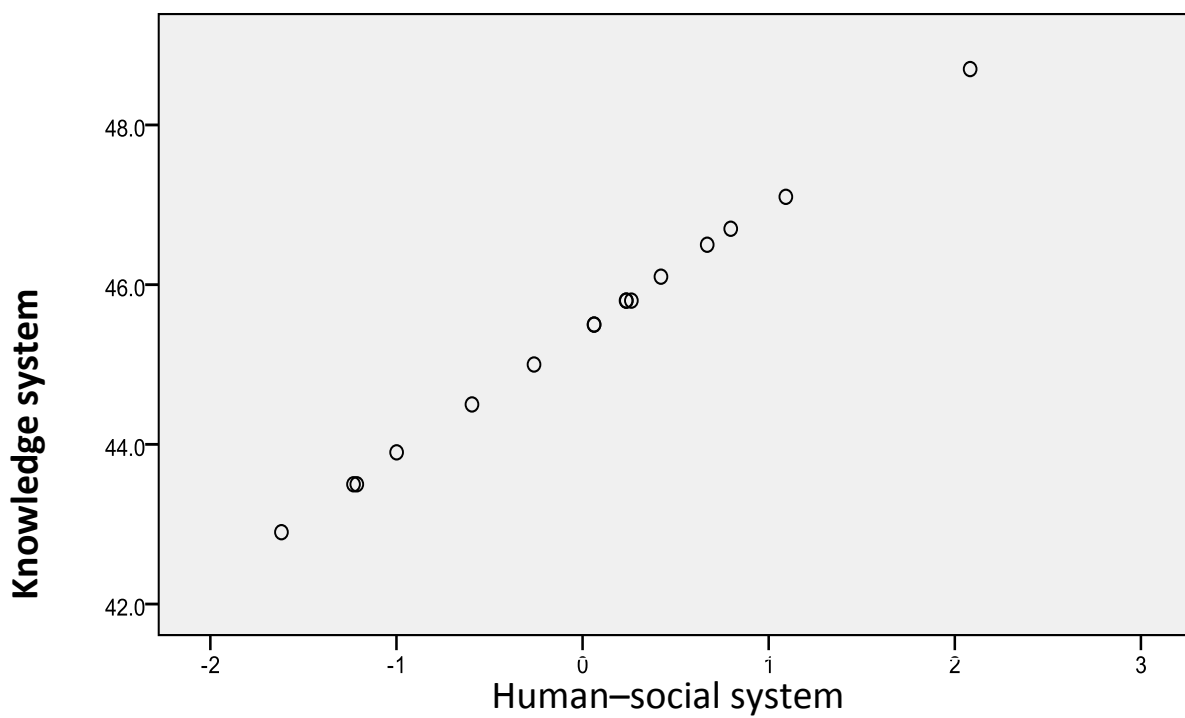


Figure 5.13 Relationships of the respondents' perceptions of the knowledge and human-social systems

5.9 Discussion

As observed in the previous section, the KM framework (KMPOST) is generally accepted by the respondents. Therefore, this section outlines the critical features considered for the KMPOST framework as below:

1. Combining learning and knowledge management

For organizations to become learning organizations, knowledge management is required. This, in turn, is dependent on a learning organization. However, these concepts are addressed separately in most KM frameworks. Therefore, to enhance KM successful implementation in organizations, the two concepts need to be combined into a single KM framework. In a culture that needs workforce competence and empowerment, the growth of learning provides a foundation for leveraging and accelerating the improvement of knowledge sharing.

KM provides the environment for learning, collaboration and sharing knowledge, and learning facilitates and supports the objectives of KM in an organization. KM and learning form powerful forces for improving organizational performance and accelerating the career growth of individuals who work with knowledge. Therefore, the concept of KM and learning should be combined into a single framework for designing a KMS.

2. Linking organizational philosophy with knowledge management

A social-technical framework needs to adopt a number of guiding principles for KM implementation. These principles should include organizational policies, plan, procedures, philosophy, structure and methods. These principles should present the organizational KM vision and link it to the overall organizational business goals. All these guiding principles should be integral parts of a KM framework as presented in the KMPOST model. These principles enable a conducive environment and promote sustainability of KM practice. Once these principles (the soft

aspects of KM) are put in place, they facilitate the successful implementation of the KMS.

3. Framework comprehensiveness

The KM framework (KMPOST) presents 55 attributes that influence successful KMS implementation. It has more comprehensive attributes of a social-technical KM framework. This approach takes a holistic perspective by combining and aggregating the KM attributes from existing KM frameworks and the UPU's postal strategy plans.

4. Importance of human perspective to KM

This research reveals that people are the most critical element in KM implementation. Thus, the framework should focus on the importance of people in relation to KM and the need to put in place appropriate change management strategy that encourage KM practice. The relevance of people of knowledge creation is attributed to the imagination and creativity in human minds and the tacit knowledge in people's mind.

5. Identification of expected KM benefits

The framework emphasizes the need for organization to identify the goal or objective of KM implementation. The lack of clear expected benefits of the KM project is one of the major obstacles to measuring the success of KMS implementation. To ensure effective measurement of KMS performance, the business problem and expected benefits of implementing a KMS should be clearly stated in the early stages of the project, as presented in the KMPOST framework.

5.10 Conclusion

This chapter has outlined the findings and analysis of the empirical investigation and discussed the results obtained from the surveys conducted. The findings of these surveys contributed in the development of the KMPOST framework (see chapter six)..

Based on this framework, suggestions were offered concerning how to overcome the challenges affecting KM practice in NIPOST. Furthermore, discussions on the features of the KMPOST framework were presented.

The next chapter will present discussions on the development of the conceptual KM Framework for the Postal Sector (KMPOST).

CHAPTER SIX

A Knowledge Management Framework for the Postal Sector (KMPOST)

6.1 Introduction

This chapter addresses the development of a conceptual KM framework for the postal sector. It provides a review of the theories, research and practices on knowledge management that have contributed to building the KMPOST framework. The chapter describes the approach and steps through which the Knowledge Management Framework for the Postal Sector (KMPOST) was developed. The KMPOST framework was developed to facilitate successful implementation of knowledge management systems in postal organizations. This framework aims to promote knowledge identification, creation, capturing, organizing, exploiting and sharing in the postal sector.

From the literature review, it is noted that no framework has been developed specifically to address the needs of the postal sector. Therefore, to add a new perspective to the body of knowledge, this study was conducted in the postal sector, taking the Nigerian Postal Service as a case study.

Two versions of this framework are presented in this chapter. The first version is based on a number of theories and assumptions from the existing literature, the preliminary study conducted on KM practice in NIPOST and the review of the postal strategy plans (2009 to 2016) and is referred to as the “pre-field investigations framework”, while the second version is based on the results of the empirical investigations conducted with domain experts and is referred to as the “post-field investigations framework”. The “post-field investigations framework” is a modified framework based on the results from the empirical investigations that were conducted to develop the final draft of the framework. The two frameworks are described in detail in the subsequent sections.

6.2 Basic Theories and Assumptions

The KMPOST framework aims to address the limitations and challenges of the existing KMS frameworks, as highlighted in chapters two. It also aims to build a knowledge management framework tailored to KMS implementation particularly in the postal sector. In developing the KMPOST framework, a social-technical perspective to the development of the KM framework was adopted. The recommendations of Rubenstein-Montano et al. (2001) on the development of a social-technical KM framework and the definition of a social-technical KM framework by Smuts et al. (2009) were taken into consideration. The recommendation is summarized as: a framework should provide a set of guiding principles for a discipline and a specific detailed description of variables to carry out the ideas and objectives set forth by the framework.

This research first derived generic attributes for effective KMS implementation through a comprehensive literature review of the existing KM frameworks (see chapters two). Then, it considered the preliminary study on KM practice in the Nigerian Postal Service (see chapter three) and the review of postal strategy plans (see chapter three). The lessons learned from these studies contributed to the development of the KMPOST framework.

This approach was adopted to lay the foundation for developing a robust framework, which takes into consideration the different social, cultural, financial, political and technical factors that influence the implementation of knowledge management, particularly in the postal sector. The factors and attributes of the KMPOST framework had to be extracted, combined and/or modified accordingly from the studies conducted.

According to Sekaran (2000), a framework is defined as a conceptual model of how theories make logical sense in relation to several factors that have been identified as being important to a problem.

In this research, a framework is considered as a set of interrelated variables established to contributing to the successful development and enhancement of knowledge management practices in the postal sector.

6.3 Development of the KMPOST Framework

To develop the conceptual framework for the postal sector, two considerations were taken into account and served as a guide for the development of the framework:

- Since no frameworks or models could be identified from the literature (see chapters two) developed for the implementation of knowledge management in the postal industry, it was necessary to draw reference from other existing similar frameworks.
- A preliminary survey of KM practice in the Nigerian Postal Service (see chapter three) and the review of the postal strategy plans (chapter three) helped in the study of the nature and core characteristics of postal functions and tasks and in understanding how knowledge is managed in the postal sector.

The KMPOST framework was developed specifically to promote KM practices in the postal sector, with a view to enhancing the quality of service of postal products and services, improving productivity and creativity and achieving sustainable development. The following subsections describe in detail the steps taken in determining the factors and attributes that formed the building blocks for the KMPOST framework. The steps taken in both the pre-field investigation and the post-field investigation are presented below.

6.3.1 Pre-field Investigation

This section describes how the KMPOST was conceptualized. It presents the logical steps followed in developing the framework to maintain a balanced approach and comprehensiveness of the attributes considered necessary for successful KMS implementation. From the comparative analysis of the selected KM frameworks, three factors of a social-technical KM framework were identified (see chapters three). These factors are the knowledge, technological and human–social systems, and the attributes considered as critical success attributes for each of the factors are depicted in figure 3.2.

From the preliminary study on KM practice in the Nigerian Postal Service (see chapter three), factors were highlighted that militated against the successful implementation of knowledge management in NIPOST. These are:

- Top management commitment
- Organizational philosophy
- Training
- Awareness
- Alignment of the organizational business strategy with the KM strategy
- IT system
- Budget
- Motivation and reward

It is worth noting that these factors are considered and identified as attributes in figure 3.2, except organizational philosophy.

From the review of the postal strategy plans (see chapter three), the critical success factors of KM identified that could facilitate the achievement of the UPU postal strategy plans are:

- ✓ Organizational learning (learning)
- ✓ Innovation and creativity (human creativity)
- ✓ Reliable and timely information (critical information)
- ✓ Holistic approach to organizational problem (system thinking)

From the above studies carried out, eight factors are considered evidence of conditions for successful KM implementation in the postal sector. These are:

- Organizational philosophy
- Learning
- Human creativity
- Critical information
- System thinking
- Knowledge
- Technology
- Human–Social

The extraction of attributes from the literature review, analysis of the selected KM frameworks, preliminary study of KM practice in the Nigerian Postal Service and review of the postal strategy plans established the first shape of the theoretical KMPOST framework, as presented in figure 6.1.

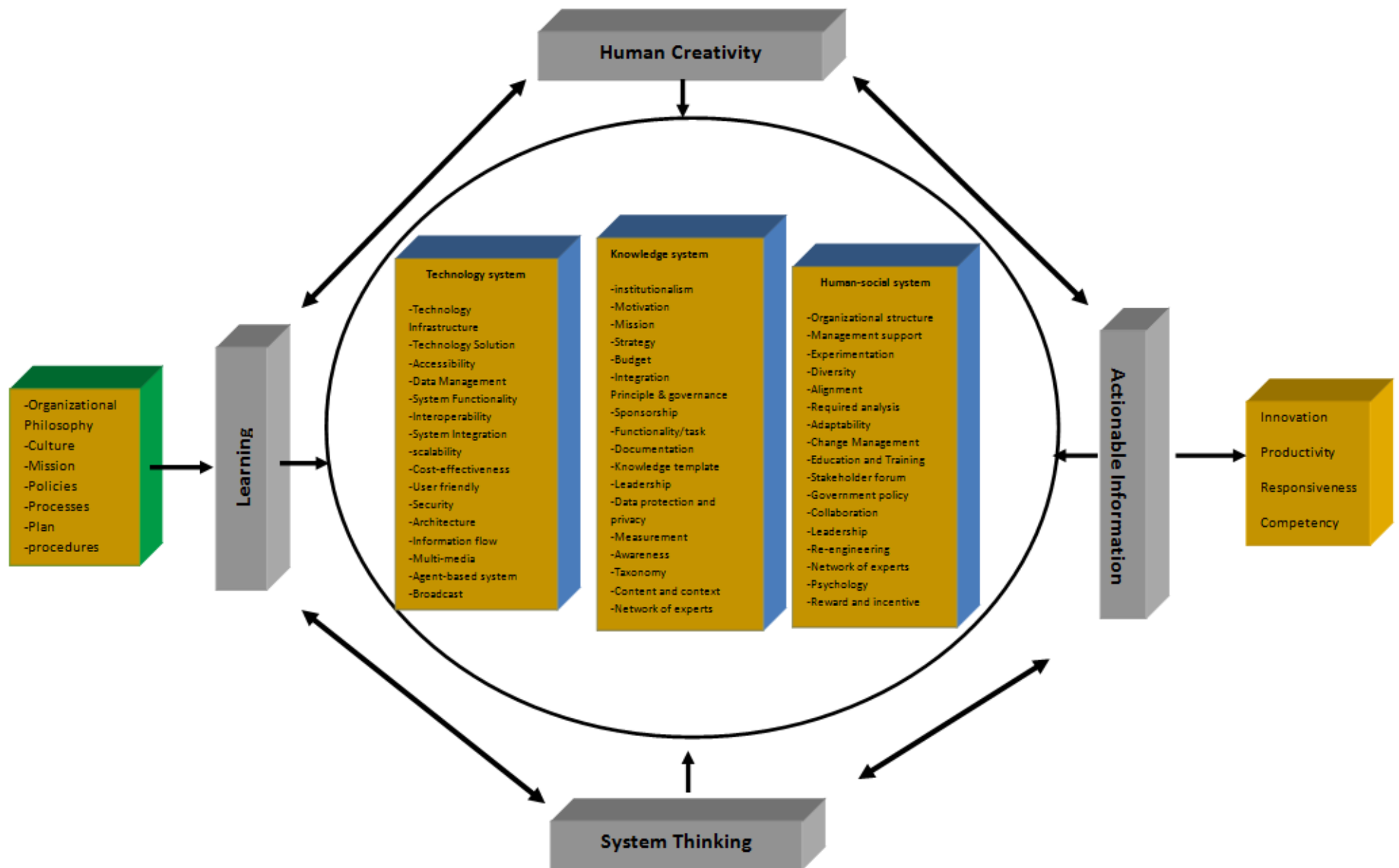


Figure 6.1 KMPOST model

The following subsections further describe these factors and attributes and their respective contributions to the development of the KMPOST framework.

6.3.1.1 Organizational Philosophy

This section considers organizational philosophy as a factor that can support and promote the implementation of a KMS in any organization. According to the Doha Postal Strategy, for each postal organization to achieve the global postal objectives set out, it needs to define its own postal policy, mission, vision, plans and priorities based on its specific challenges and opportunities. Therefore, each postal player needs to redefine its organizational mission, policy and priorities to reflect these objectives of the postal strategy plans to achieve the desired level of sustainable development and stimulate growth in the postal sector.

The organizational philosophy needs to be considered in the early stage of designing and implementing KMS. It has a significant effect on the success of KMS implementation. It is necessary to find out whether the organizational philosophy (policies, vision, mission and culture) can support KM practices. If not, it will be necessary to review the organizational philosophy to ensure that it can support and promote KM practices. The organizational KM philosophy should promote policies that support the organization initi knowledge management activity and specify how it can be sustained. Organizational success and the ability to sustain knowledge management depend on the kind of organizational policies, processes, culture, plan, procedures and vision that are practised.

Organizational processes and cultural issues are considered to be major obstacles to the successful implementation of knowledge management systems (McCullough, 2005; Murray, 2000). Therefore, an organization needs to define what knowledge management means to it and to develop a clear knowledge management vision for the organization. The KM vision should ensure that the knowledge management strategies are aligned with the overall organizational goals and objectives. These issues need to be considered very seriously before commencing any KM initiative.

Organizational philosophy can promote a culture in which learning and knowledge transfer take place between those who need new knowledge and those who can provide it (Swan and Newell, 2000). In this research, organizational philosophy is referring to the main values, expectations and principles that work for the postal organizations in achieving its goals and pursuing its activities. Therefore, the organizational philosophy is considered a critical factor for the successful implementation of a KMS in the postal sector; hence, it is reflected in the KMPOST framework.

6.3.1.2 Learning

Another significant consideration in the KMPOST framework is the concept of learning. It considers learning as a factor for acquiring knowledge in the postal sector. It helps employees to develop the habit of learning from one another and learning to carry out new tasks in their workplace. Before individuals or organizations can improve, they must first commit to learning. In the absence of learning, a postal organization and its employees simply repeat old practices in a dynamic, changing postal environment. Learning is considered to be the creation and acquisition of potential and actual ability for people to take effective action (Bennet and Bennet, 2004).

The concept of organizational learning is concerned with the processes for acquiring information, interpreting data, developing knowledge and sustaining learning (Kezarr, 2005). The author further states that a learning organization requires knowledge management, which in turn is dependent upon organizational learning. Therefore, the postal sector, more than ever before, need to promotes learning among its employees to enhance the efficiency of the postal network and sustainable development in the sector.

The relevance of this concept to the postal sector cannot be overemphasized in view of the various reforms in the sector and the need to modernize and diversify the postal products and services to foster growth in the postal market. Postal reforms, modernization and diversification of products and services involve many processes and most times early starters (postal organizations)

learn from their mistakes during these processes. Other postal organizations in this sector do not need to reinvent the wheel by making the same mistakes; rather, they should learn from the mistakes of others. This factor of learning will allow postal organizations to leapfrog in the diversification and modernization of postal products and services as well as in the transformation of the postal sector, which in general will enhance the quality of postal services. In this research, learning is referring to the act of acquisition of new knowledge or skill from best practices by postal employees and organizations. In view of this, learning is considered a critical factor in the KMPOST framework.

6.3.1.3 System Thinking

The postal sector operates in a changing social, economic, political and technological business environment. In such a dynamic and complex business environment, the need to consider the postal sector from a broad perspective cannot be overemphasized.

To create the desired knowledge to achieve a sustainable competitive advantage in the sector, there is a need for a comprehensive analysis of the impact of these changes within and outside the sector.

Basically, system thinking view systems from a broad perspective, this broad view help to identify issues in an organization quickly and to determine exactly how to address them.

Schlange (1995) states that system thinking can enhance knowledge management through its ability to depict complex, dynamic processes and thus enhance the understanding and ability of knowledge management systems to respond to the needs of the organization. According to Rubenstein-Montano et al. (2001), system thinking in knowledge management helps to view the entire knowledge management process of the organization. They explain further that system thinking is important for a knowledge management framework, stating that it facilitates the linkage between the knowledge and management initiatives and the strategic goals and objectives of an organization.

In this research, system thinking is referring to comprehensive approach to the analysis of the postal sector as a whole system focusing on the way the postal system interrelate and how it work in order take better decision and act appropriately.

6.3.1.4 Critical Information

According to Gandong et al. (1999), KM should be a representation of both the content and the context of information that is actionable. That is, KM should actively provide users with only the critical information that is necessary and useful to take accurate and timely decisions.

Most organizations are confronted with issues and challenges of information overload and potentially useful content in their KMS. Therefore, KM must ensure that the information captured and stored is meaningful and timely for making decisions that ensure organizational efficiency. The importance of this factor is that it allows easy access to the information needed and reduces the storage of unneeded information, which consequently reduces the cost of acquiring and maintaining data storage for the document repository and communication network in the organization. Therefore, to overcome these challenge the development of critical information in a KM framework.

KM in the postal sector should ensure that the best practices are subjected to continual re-examination and modification, given the dynamic, changing business environment. This means that the context of information needs to be properly studied, taking into consideration the prevailing business environment, before taking any business decision.

The postal sector needs more than ever before to put in place the necessary standards, criteria and regulations of the Universal Postal Service without any ambiguity so that the postal markets can operate in an effective manner, eliminating outdated and unnecessary information. This can be achieved through the development of reliable statistical and analytical data that allow postal decision makers to take appropriate decisions. The need for interoperability among postal organizations also calls for the sharing of reliable

and timely information within the postal network to enhance the quality of service, reliability and efficiency of the postal sector.

Critical information in this research refers to reliable postal statistics and information that enables postal managers to take promptly and accurate decisions and actions.

6.3.1.5 Human Creativity

The postal sector has hundreds of thousands of employees who work in the post network. These employees' continues to interact within and outside the postal network to create the desired knowledge in the sector.

Therefore, the current KM framework should view human creativity as an important attribute in its design, considering the interpretative and subjective nature of knowledge creation.

The postal sector in particular needs innovation and creativity in view of the technological advancement and other challenges confronting the postal sector. These challenges have negatively affected the volume of traditional postal business (mail), hence the need to diversify to respond to customer needs. Modernization and diversification of services and products require human creativity.

The employees of postal organizations need to be committed to working in a new way to meet their customers' ever-changing needs. To achieve this, the postal sector has to encourage and support its employees to be creative. Hence, human creativity is considered as an important factor in the KMPOST model.

In this research, human creativity is referring to ability of the postal employees and organizations to provide innovative postal products and services in a better and unique way to meet the satisfaction of its customers.

6.3.1.6 Technological System

The critical role of technology as a key enabler for implementing successful knowledge management is not in doubt. It plays a role in supporting organizations' KM processes (Alavi and Leidner, 2001).

Technology is expanding its global reach and access, fuelling an ever-increasing demand for information. All this is changing the ways in which individuals, businesses and governments communicate, transact and behave, and these have effects on the postal market. Therefore, the knowledge management framework for the postal sector cannot afford to ignore the factor "technology" in designing KMS.

The KMPOST framework presents eleven attributes for the technological system. These attributes are considered necessary for designing and developing the technological system of a KMS. These include; infrastructure, data management, inter-operability, cost-effectiveness, technological solution, system functionality, system integration, scalability, user-friendliness, information flow, architecture, accessibility, security, multi-media, web-based solution and agent-based system.

The first considerations in the technological system are the technological infrastructure, solutions and accessibility, as presented in figure 8.1. The infrastructure consists of all the hardware devices required for the implementation of a KMS. These include the computer system, server, network devices, data capturing terminal and so on. The solution is concern with the applications that drive the KM processes, such as the knowledge base, portal, business intelligence, data mining and workflow. Accessibility is concern with the interconnection between devices and the access to information and knowledge. These consist of the local area network (LAN), wide area network (WAN), metropolitan area network (MAN), Intranet and Internet. The connection for these networks could be achieved through a fibre-optic, VSAT or mobile network. System interoperability and integration facilitate the deployment of KMS solutions on organizations' existing technology platform. Understanding the KMS architecture and the database helps in deriving the maximum value for

KM implementation. Scalability assists in the gradual upgrading of the technological system.

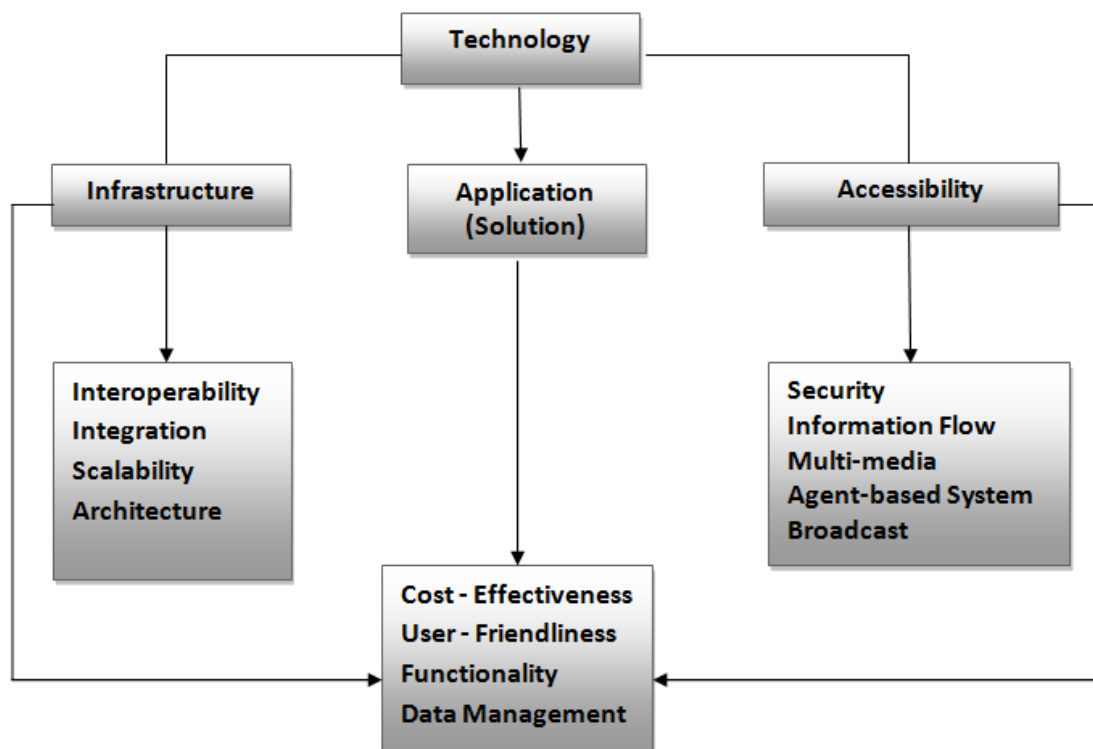


Figure 6.2 Technological system

The important factors that need to be considered in the development of a KMS include cost-effectiveness, user-friendliness and functionality. The factors to be considered concerning the accessibility of the KMS are the security, information flow, multi-media, agent-based system and broadcast. Determining the knowledge gap in an organization helps to design a better information flow. A good design of the information flow facilitates knowledge sharing between the knowledge owner and those who need the knowledge. To share knowledge efficiently in an organization, various communication strategies need to be taken into consideration.

In this research, technology is referring to the collection of techniques, methods and processes used to provide postal products and services to accomplish postal objectives. Indeed, technology plays a dominant role as an enabler in

facilitating communication, collaboration, storage and data capture in the postal organizations.

6.3.1.7 Knowledge System

The postal sector is seen as an essential factor of the global knowledge economy and its operations and activities are knowledge-driven. It requires knowledge of its customers and their changing needs, knowledge to develop new products and services and knowledge of its competitors, technologies and stakeholders.

The KMPOST framework presents 18 attributes for the knowledge system, including the mission, functionality, strategy, integration, institutionalization, sponsorship, motivation, organization structure, trust, leadership, budget, documentation, knowledge template, data protection and privacy, measurement and awareness, as shown in figure 6.3.

To manage knowledge (explicit or tacit) in an organization successfully, there is a need to define clearly the policy on management and processes of knowledge management activities in the organization. The policy should state the mission and the strategy of the organizational knowledge management implementation. This must be in line with the overall organizational business objective. Strong leadership support and sponsorship are required to achieve the desired goal of implementing knowledge management. Several processes are involved in managing organizational knowledge; such processes should be defined in the functionality of the knowledge system. This requires budgetary allocation to achieve such processes and to deploy the needed infrastructure.

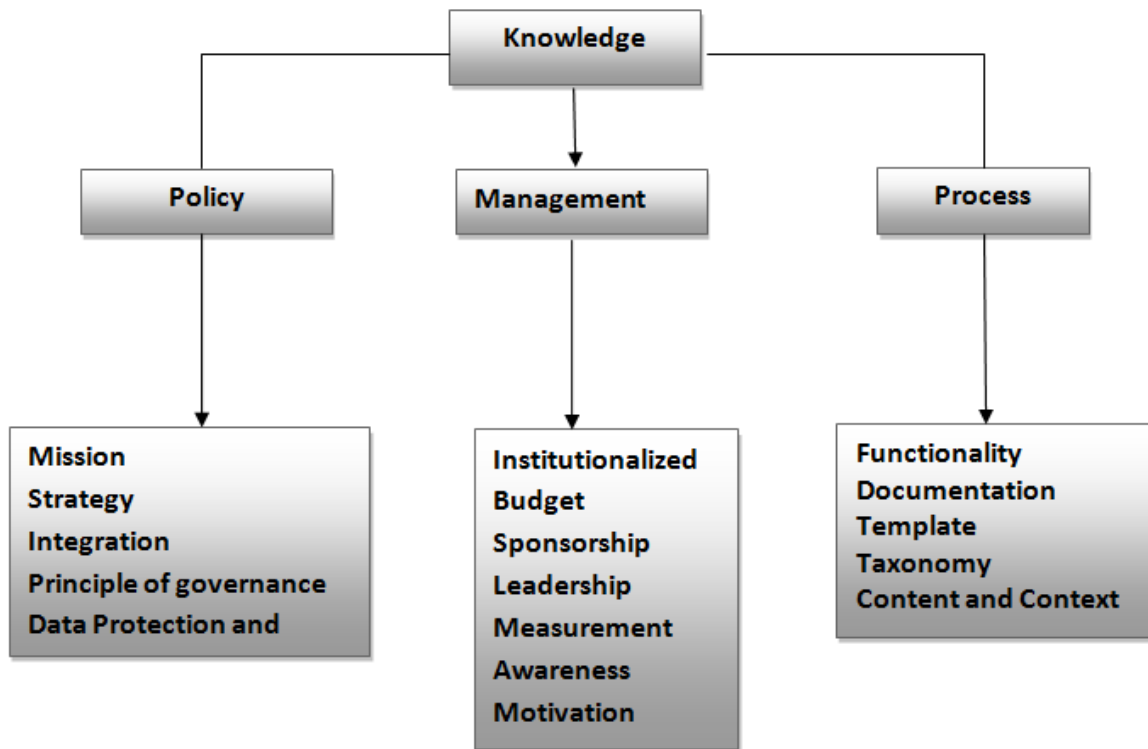


Figure 6.3 Knowledge system

Effective knowledge capture and storage are guaranteed with proper design of the knowledge template for knowledge documentation. The template allows clear definition and classification of data such that only relevant data are captured.

Adequate awareness and motivation promote knowledge activities in any organization. Employees need to be properly informed about the concept of knowledge management and the benefits to be derived from implementing knowledge management. Domain experts in the various knowledge areas need to be identified and appropriate knowledge management principles and governance need to be adopted to ensure that the content and context of the knowledge captured and shared are timely and relevant.

Adequate KM measurement enables the organization to track the progress of KM implementation and to determine its benefits and effectiveness.

Knowledge is referred to in this research as the act of possession or the ability to quickly locate the desired postal information or know-how by postal employees and organizations.

6.3.1.8 Human-Social System

The employees are the greatest asset of the postal sector, so effective management of these employees is crucial to the success of KM in this sector. The postal sector operations rely heavily on human activities in terms of mail distribution and delivery. Therefore, issues that affect the human–social system of knowledge management are taken into consideration in the KMPOST framework.

The KMPOST framework presents 18 attributes for the human–social system. These include; psychology, environmental analysis, collaboration, communication, re-engineering, experimentation, adaptability, self-leadership, education and training, network of experts, alignment, diversity, content and context, change management, stakeholder forum and government policy, as shown in figure 6.4.

The KMPOST framework takes into consideration the importance of human and social aspects in the knowledge management framework for the postal sector. Postal employees are important variables in KM implementation. Therefore, making employees willing to share their knowledge is regarded as critical for the successful implementation of KM in the sector. This could be facilitated by creating an organizational structure that promotes collaboration among employees and allows employees to communicate their thinking and experiences freely.

Employees are encouraged to experiment with their ideas and learn from their mistakes. This type of organizational structure will also influence the mindset and behaviours of employees regarding knowledge management activities.

Management leadership plays a key role in influencing the success of KM. The management should act as a model to exemplify the desired behaviour for KM.

To involve employees in knowledge management, organizations may need to create various reward mechanisms to encourage them to share their knowledge.

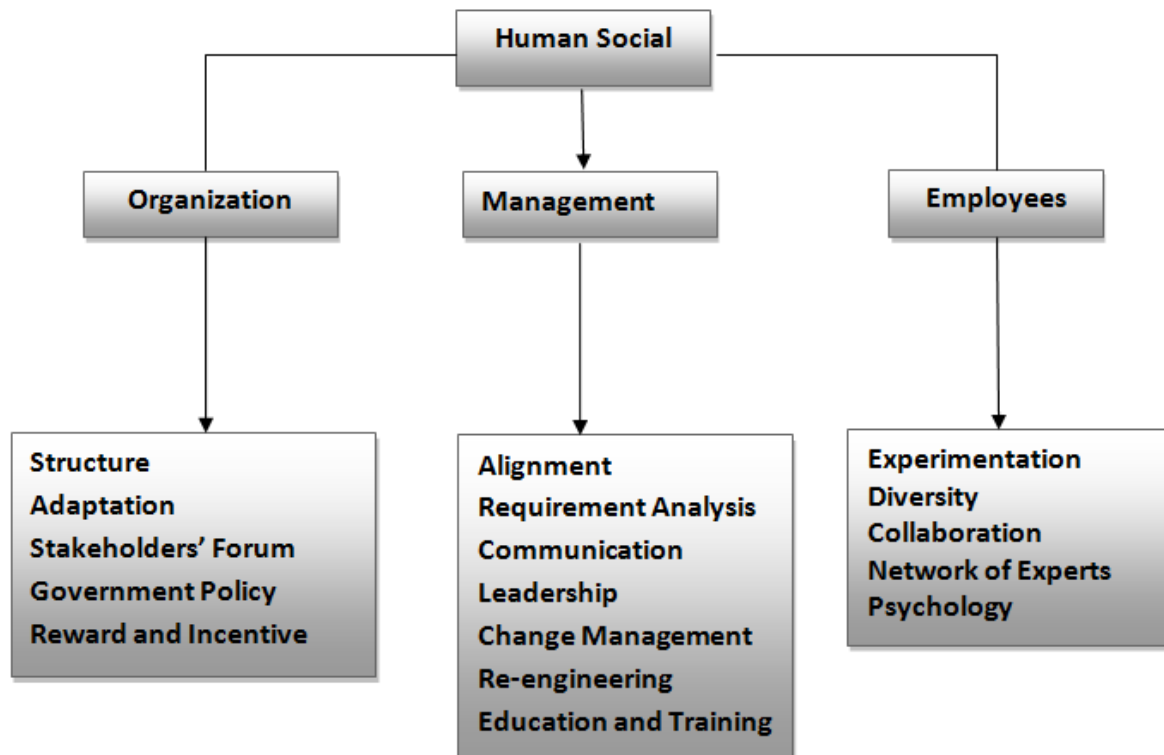


Figure 6.4 Human–social system

The education and training of employees on the concepts of KM is another important consideration for successful KM. Employees need to be aware of the importance of managing knowledge and to recognize it as a key resource for the viability of the organization.

The diversity of the organization’s employees and specialists in terms of knowledge sharing and transfer need to be aligned to realize the full value of the organization’s knowledge resources. Organization Business Process Re-engineering aims to transform organizational operations and enhance organizational performance, which requires taking full advantage of the knowledge resources in the organization.

Human-social system in this research is referring to creating the conducive business environment for interaction in postal organizations.

6.3.1.9 KM Benefits

The KMPOST framework addresses the need to identify the benefits of implementing a KMS. In any organization, when employees understand the benefits of implementing a new project (such as a KMS), they tend to be more involved and committed to the project. The expected result of implementing KM varies from organization to organization. However, most organizations implement a KMS to increase employee efficiency or effectiveness, to enhance the quality of the existing services and products or to help their employees to become more innovative and creative; it also helps to achieve a competitive advantage.

When the expectation of the KMS implementation is not clearly identified, it is difficult to measure its success. To address this challenge, the identification of KM benefits is incorporated into the framework to allow for the definition of the expected result of implementing the KMS, that is, what the organization wants to achieve from implementing the KMS.

6.4 Post-field Investigation

This section discusses the adjustment of the KMPOST based on the field empirical investigations during the interview session in NIPOST and the experts' opinion on the framework (see chapter five). The findings of the survey revealed the following:

1. Awareness: the low involvement of employees in the KM project in NIPOST was attributed to the lack of awareness among the staff. Section 3.7.1.1 showed that 50% are not aware of any KMS in the organization. This factor, "awareness", is critical to the successful implementation of a KMS in an organization; hence, it should be treated separately as a factor of the knowledge management framework. In view of this, the attribute "awareness" is removed from the knowledge system and treated as a factor in the post-field investigation. It is believed that if employees are adequately aware of the concept of any project, their participation will be

better. Adequate awareness needs to be created at the initial stage of any project.

2. Identification: The findings in section 3.7.1.4 highlight another reason for poor participation in the KM project in NIPOST, which is the lack of clear identification of the knowledge problem area and the benefits expected to be derived from KMS implementation. It is also noted that, to implement a KMS successfully, an organization needs to determine clearly why and what the KM needs are. These questions lead to clear identification of the organizational business problem that requires a KMS.

Therefore, the starting point for successful implementation of a KMS in an organization is the identification of the business problem(s) that needs to be solved with KMS. Secondly, the benefits to be derived from implementing the KMS must be determined. When these issues are clear, then the appropriate KMS processes and technologies needed to achieve the expected result from implementing the KMS will be identified.

In the light of these observations, the KMPOST framework was reviewed and the final KMPOST model is shown in figure 6.5.

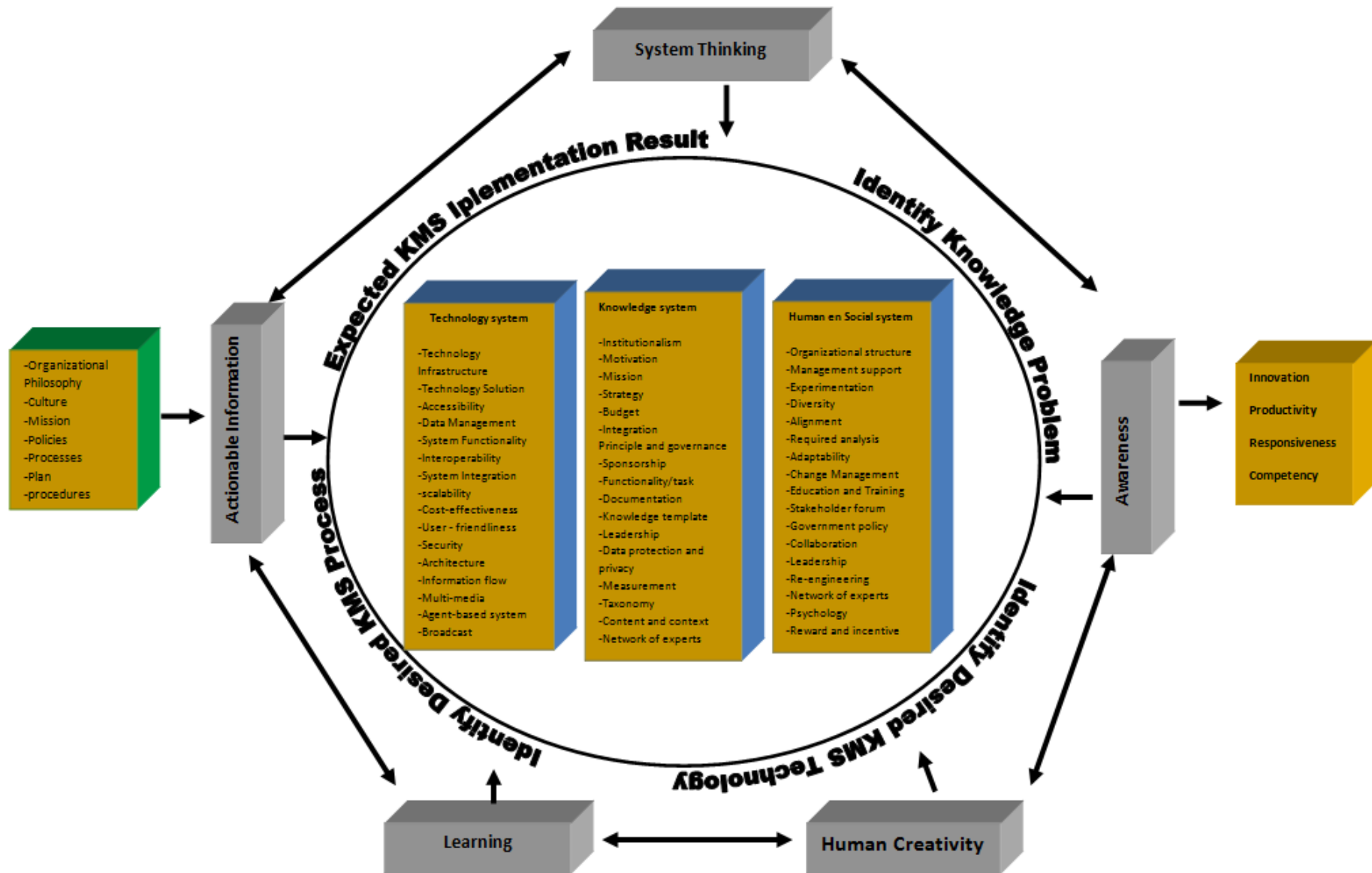


Figure 6.5 Final KMPOST model

For the purpose of this research, the factors presented in the KMPOST framework are classified into three groups. The first is considered as the foundation layer and consists of the identification of the knowledge problem area, KM processes, technology and expected benefits of the implementation of KM. The second is considered as the sustainable layer and consists of learning, human creativity, awareness, actionable information, system thinking and organizational philosophy. The third is considered as the core layer; this consists of knowledge, technology and human–social systems.

6.5 Framework Summary

Generally, organizations initiate and implement KM projects in different ways, and the approach chosen by an organization depends on the KM initiatives and how they can be applied to contribute to business growth and developments. This study focuses on how KM practices can be enhanced in the postal sector to facilitate knowledge sharing in order to improve operational efficiency and staff productivity and enhance decision making in the sector.

The outcome of this study aims to enable the postal sector to realize the importance of KM and identify any performance gaps and/or opportunities for their implementation. The key facets of competitive advantage in the postal sector lie in the continual improvement and diversification of products and services. This empirical study also presents an opportunity to gain a better understanding of the challenges of implementing successful KM practices in the postal sector.

The pre-field investigation studies established the first shape of the theoretical KMPOST framework (see figure 6.1). The theories and assumptions of the KMPOST framework are based on the literature review of KM frameworks, the preliminary study of KM practice in NIPOST and the review of postal strategy plans (the Nairobi Postal Strategy 2009 to 2012 and the Doha Postal Strategy 2013 to 2016).

Adjustments were made to the KMPOST framework based on the field empirical investigations. The final shape of the KMPOST framework was described by

reviewing the discussion on the factors that contributed to the development of the final KMPOST framework.

The next section presents a comparison between the KMPOST framework and the selected KM frameworks (see chapter three).

6.6 Comparison between the KMPOST framework and the Selected KMS Frameworks

Table 6.1 presents a comparison between the KMPOST framework and the five selected KMS frameworks (see chapter three). The table shows that none of the selected KMS frameworks has comprehensive attributes compared with the KMPOST framework.

Table 6.1 Comparison of the KMPOST and the selected KMS frameworks

ATTRIBUTES	PROPOSED KMS FRAMEWORK	MOSTAFA ET AL. (2007)	RUSLI ET AL. (2008)	SMUTSET AL. (2009)	PARAG (2009)	SAJEVA (2010)
PROBLEM IDENTIFICATION	✓	X	X	X	X	X
EXPECTED KMS RESULT	✓	X	X	X	X	X
KMS PROCESS	✓	✓	✓	X	X	✓
ORGANIZATIONAL PHILOSOPHY	✓	X	X	X	X	X
- VISION	✓	X	✓	X	X	✓
- PLAN	✓	X	X	✓	X	X
- POLICIES	✓	X	X	X	X	X
- PROCEDURES	✓	X	X	X	X	X
- PROCESSES	✓	X	X	X	X	X
- CULTURE	✓	✓	X	X	✓	X
ORGANIZATIONAL LEARNING	✓	✓	X	X	✓	X

- HUMAN CREATIVITY	✓	X	X	X	✓	X
- ACTIONABLE INFORMATION	✓	X	X	X	X	X
- SYSTEM THINKING	✓	X	X	X	X	X
HUMAN-SOCIAL SYSTEM						
- ORGANIZATIONAL STRUCTURE	✓	X	✓	✓	✓	✓
- MANAGEMENT SUPPORT	✓	✓	X	✓	✓	X
- EXPERIMENTATION	✓	X	✓	X	X	X
- DIVERSITY	✓	X	X	X	X	X
- ALIGNMENT	✓	X	X	X	X	
- REQUIREMENT ANALYSIS	✓	X	X	✓	X	X
- ADAPTABILITY	✓	✓	✓	✓	✓	✓
- CHANGE MANAGEMENT	✓	✓	X	✓	X	X
- EDUCATION AND TRAINING	✓	✓	✓	✓	✓	✓
- STAKEHOLDER FORUM	✓	✓	X	X	X	X
- GOVERNMENT POLICY	✓	X	X	X	X	X
- COLLABORATION	✓	✓	X	✓	X	✓
- COMMUNICATION	✓	✓	X	X	X	X

- LEADERSHIP	✓	✓	X	X	✓	✓
- RE-ENGINEERING	✓	✓	X	X	X	X
- PSYCHOLOGY	✓	X	X	X	X	✓
- REWARD AND INCENTIVE	✓	✓	✓	X	✓	✓
TECHNOLOGICAL SYSTEM						
- TECHNOLOGY SOLUTION	✓	✓	✓	✓	✓	✓
- INFRASTRUCTURE	✓	X	X	X	X	X
- ACCESSIBILITY	✓	X	X	X	X	X
- DATA MANAGEMENT	✓	✓	✓	X	✓	✓
- SYSTEM FUNCTIONALITY	✓	X	X	X	X	X
- INTEROPERABILITY	✓	X	✓	X	✓	X
- SYSTEM INTEGRATION	✓	X	X	X	X	X
- SCALABILITY	✓	X	X	X	X	X
- COST-EFFECTIVENESS	✓	X	X	X	X	X
- USER-FRIENDLINESS	✓	X	✓	X	X	X
- SECURITY	✓	X	X	X	X	X
- ARCHITECTURE	✓	X	X	X	X	X

- INFORMATION FLOW	✓	X	X	X	X	X
- MULTI-MEDIA	✓	X	X	X	X	X
- AGENT-BASED SYSTEM	✓	X	X	X	X	X
- BROADCAST	✓	X	X	X	X	X
KNOWLEDGE SYSTEM						
- INSTITUTIONALIS M	✓	X	X	X	X	X
- MOTIVATION	✓	X	✓	X	X	X
- MISSION	✓	X	✓	X	X	
- STRATEGY	✓		✓		X	✓
- BUDGET	✓	✓	✓	✓	X	✓
- INTEGRATION	✓	X	X	X	X	X
- PRINCIPLE ANDGOVERNAN CE	✓	X	X		X	X
- SPONSORSHIP	✓	X	X	✓	X	X
- FUNCTIONALITY	✓			✓	X	
- DOCUMENTATION	✓	✓	X	X	✓	X
- KNOWLEDGE TEMPLATE	✓	X	X	X	X	X
- METHODOLOGY	✓	✓	X	✓	X	X

- DATA PROTECTION AND PRIVACY	✓	X	X	X	X	X
- MEASUREMENT	✓	X	X	✓	X	X
- AWARENESS	✓	X	✓	✓	X	X
- TAXONOMY	✓	X	X	X	X	X
- CONTENT AND CONTEXT	✓	X	X	X	X	X
- NETWORK OF EXPERTS	✓	✓	X	X	X	X
-	✓	✓				

6.7 KMPOST Framework Implementation

This section describes the activities involve in the implementation of KMPOST framework (see table 6.2). It provides the procedures to be followed. The detailed attributes and activities are contained in the framework.

Table 6.2 Description of KMPOST Implementation

KMS procedure	KMS procedure description
Identify the business problem	Define clearly the organizational business problem to be solved and what, why and how KM can be used to solve the problem
Identify the expected results to be achieved	Define clearly the expected result from KM implementation. Statethe benefit to all stakeholders (the organization, employees, customers, shareholders, etc.), properly developing the way to measure success.
KMS processes	Determine the right KMS processes that will yield the desired result.
Organizational philosophy and culture	Review the organizational philosophy and culture to support these initiatives. Review and develop organizational policies, procedures, vision and plans to reflect and promote knowledge management.
System thinking	Take a comprehensive approach in designing and developing the KMS. The factors considered necessary for the implementation of organizational KM should be considered at the planning stage.
Human creativity	Take into consideration the human dimension of organizational knowledge creation, especially the tacit dimension of knowledge creation.

Critical information	Ensure that users are provided with only the critical information that is necessary and useful to take accurate and timely decisions.
Awareness	The creation of adequate KM awareness for implementation in an organization is critical to the success of KMS.
Learning	Build up a learning culture (learning before, learning during and learning after): a culture in which employees are willing to share their experiences and learn from others. Build a culture of systematic thinking and creativity supported with incentives.
Knowledge	Align these initiatives with the overall business objectives. Obtain management buy-in and sponsorship. Create KM awareness in the organization. Establish and perform a knowledge audit and draw up a strategy for implementation.
Human–social	Develop a change management plan that helps change to a knowledge-sharing culture. Establish clear communication channels, setup a strong knowledge management team, re-engineer business processes, etc.
Technology	Employ a suitable user-friendly KM solution that will solve the key business problems. Deploy IT infrastructure that is scalable, cost-effective, secure and interpolative.

To implement a KMS in an organization, there is a need for the organization to identify the knowledge problem area to be addressed using the KMS and the expected results to be achieved in implementing the KMS. The right KMS processes and technology to be adopted should also be identified.

Secondly, the organization needs to ensure that all the necessary policies, structure, processes and other related considerations that will promote and support KM are put in place. A learning organization helps its employees to be

innovative and creative; therefore, the issue of learning should be considered as a factor for the successful implementation of a KMS. Another important issue to take into consideration is the concept of critical information and system thinking. The concept of critical information ensures that the KMS is not overloaded with irrelevant information, while system thinking allows employees to be more articulate in their reasoning and actions.

Lastly, there are the issues of technology, knowledge and human–social factors. It was stated earlier that these factors are the backbone of KM implementation. They involve selecting the appropriate technology, determining the KM team and sponsor and the budget for the KM initiative, creating KM awareness and developing the appropriate KM strategy.

6.8 Conclusion

In this chapter, the processes adopted to develop the KMPOST framework were discussed. The pre-investigation and the post-investigation framework were presented. A detailed discussion of the factors and attributes considered in developing the KMPOST framework was presented. To develop the KMPOST framework, factors and attributes were extracted from the existing KMS frameworks in the literature review, the preliminary study of KM practice in NIPOST and the postal strategies (2009–2016), providing the KMPOST framework with the most comprehensive attributes of a KM framework. None of the selected KMS frameworks has comprehensive attributes compared with the KMPOST framework, as shown in table 6.2. This comprehensiveness aims to address the weaknesses of the existing KMS frameworks and bridge the gap of lack of a KM framework specifically develops for the postal sector in the literature.

The factors and features of the KMPOST framework were outlined and discussed. The KMPOST framework was reviewed based on the findings from the survey conducted. The evaluation of the KMPOST framework is presented in chapter seven.

CHAPTER SEVEN

Evaluation of the KMPOST framework

7.1 Background

The Nigerian Postal Service was chosen as a case study to evaluate the KMPOST framework. To achieve this, a KMS was designed with the aim of verifying the factors and attributes considered in developing the KMPOST framework.

This chapter presents two case studies conducted in NIPOST. The first case study was conducted in the ICT Department to facilitate knowledge management among the staff with a view to enhancing staff productivity. The second case study was conducted in the Operations Department to facilitate knowledge management with a view to enhancing the operational efficiency of the International Postal System (IPS) in NIPOST. The discussions of these case studies are presented in the next sections.

7.2 Case Study 1: Implementation of the KMS in the ICT Department at NIPOST

Prior to 2006, NIPOST had a Management Information System (MIS) unit, which ran the organization's payroll system. The payroll system was centralized at the corporate headquarters and generated payslips for staff at the end of each month. During that period, all the operations in terms of internal business processes (such as human resource management and financial and accounting management) and the counter and mail operations were carried out manually.

The lack of automation of NIPOST's business processes affected the quality of service delivery and general effectiveness of NIPOST and its ability to compete effectively with its competitors. Besides, NIPOST could not meet its customers' ever-changing needs and desire for services through new technologies. To overcome these challenges, NIPOST set up an Information and Communication Technology (ICT) Department in 2006.

7.3 Information and Communication Technology (ICT) Department

The ICT Department was set up to drive the ICT initiatives of NIPOST. The functions of the department include:

- (1) Facilitating the automation of internal business processes.
- (2) Facilitating the automation of counter and mail offices, with a full track and trace system.
- (3) Identifying ICT training needs for the organization and supporting end-users.
- (4) Advising management on ICT issues and preparing the ICT budget.
- (5) Deploying and maintaining ICT facilities in NIPOST, among other functions.

To achieve the above objectives, NIPOST looked for IT-skilled manpower to deploy to the ICT Department, initially within the organization. Unfortunately, only six IT-skilled officers with professional certification were found in the MIS unit.

Later, in 2007, NIPOST recruited about 20 IT-skilled staff. Unfortunately, most of them left the organization because of the salary structure of NIPOST, which they considered poor compared with other government agencies and the private sector.

The department needs at least 1 ICT staff member in each of the 32 area offices (territories). Each territory supervises postal operations in a number of post office outlets. The territorial ICT staff functions include supervising and maintaining the systems and the applications deployed. They offer support services to end-users and provide staff in the territory with ICT training. All the back-end applications and servers and all the ICT projects are managed and hosted by the corporate headquarters.

This development became a problem for the ICT Department. How could it drive the ICT initiatives of NIPOST with the limited number of skilled IT staff? Another challenge for the ICT Department was that the level of computer literacy of the staff in NIPOST was very low.

This problem became a challenge to NIPOST's management. The management decided to transfer officers with basic computer knowledge from other departments to the ICT Department. The skilled officers were deployed at the headquarters to manage the key strategic operations of the department, while the transferred officers (converted officers) were deployed to the territories to support and supervise ICT projects.

7.4 ICT Challenges

Between 2007 and 2009, the ICT Department carried out many activities, including:

- (1) Training of the converted staff
- (2) Deployment of VSAT to 100 post office outlets for Internet connectivity.
- (3) Partnership with a private ICT company to develop a counter and mail automation application called the Integrated Postal Management System (IPMS).
- (4) Development and deployment of a human resource application and financial accounting system for NIPOST.
- (5) Deployment of about 1500 computer systems in the headquarters and the territories.

Several training activities were organized to enable the ICT officers to facilitate the implementation of these projects. However, the converted officers could not effectively manage and support the implementation of these projects in most territories. This resulted in the failure of ICT projects in most territories. Because of this, the few skilled ICT officers have to travel frequently to these territories to provide support. This caused the transport and travel budget for the ICT Department to be high in 2009 and 2010. Furthermore, subsequent training for the converted officers was not possible because of the lack of an adequate budget for ICT training.

The challenge here was how the ICT Department could reduce the frequent travelling of its skilled staff and at the same time enhance the efficiency and productivity of the converted officers to manage the systems and applications effectively in their respective offices.

7.5 Why a Knowledge Management System?

The management of the ICT Department considered these challenges and discussed how to resolve them. The main challenges are:

1. To enhance the performance of the ICT staff, especially those in the territories (converted officers).
2. To reduce the failure rate of the implementation of ICT projects.
3. To reduce the movement of skilled staff for technical support.

The department therefore agreed to use KM to facilitate knowledge sharing among its staff to address the above problems. In 2011, the department obtained approval from NIPOST's management to train ICT officers in knowledge management. The training was conducted in the Nigerian Postal Institute in Kaduna, Kaduna State, Nigeria. The theme of the training was "enhanced operational efficiency through knowledge sharing". After the training programme, the ICT staff and management decided on a knowledge management system to use and the procedures, processes and plans for project implementation.

Officers were trained on how to learn from best practice, how to learn from others and how to develop their skills using a knowledge management system. The KMPOST framework was used as a guideline for the development of the knowledge management system in the ICT Department.

7.6 Knowledge Management System Solutions

Different knowledge management systems are used by different organizations. The cost of deploying a knowledge management system also varies. In this

case, the ICT Department had no budgetary provision for the deployment of a knowledge management system. Therefore, a free KMS known as a Yahoo group was developed (see fig. 7.1). The user group setup for the ICT officers is known as “Yahoo-ICT”. The yahoo-ict@yahoogroups.com user group facilitates knowledge sharing and communication among officers in the ICT Department.

The Yahoo-ICT user group is also used:

1. To send instructions for deploying applications and systems;
2. To send information on any update or upgrade;
3. To send information on best practice;
4. To allow officers to ask any operational questions, which are answered by colleagues;
5. To enhance collaboration among staff.

To achieve this objective, a team of five ICT-skilled staff was set up. It was headed by the Project Manager (Mr Gabriel Sotonwa) of the ICT Department for the successful implementation of the knowledge management system. The team was responsible for setting up ICT officers in the Yahoo-ICT user group, providing technical support to all the officers and monitoring and reviewing the questions and contributions from members. The implementation of the KMS in the ICT Department using the KMPOST model is presented below:

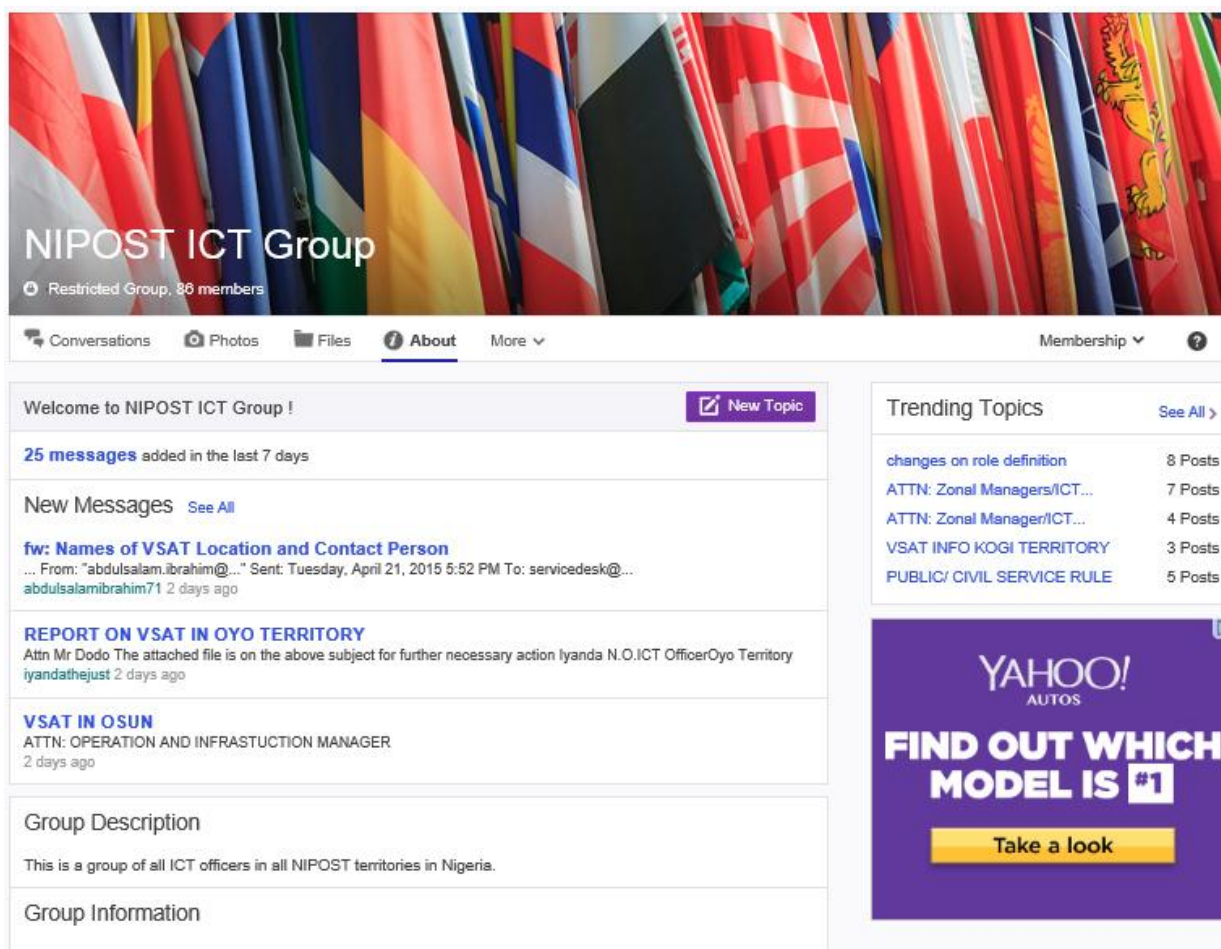


Figure 7.1: KMS design for ICT Department

Table 7.1 Description of the implementation of the KMS in the ICT Department using the KMPOST framework

KMS methodology procedure	KMS implementation using the proposed integrated KMS framework
Identify the business problem	The high failure rate in the implementation of ICT projects as a result of a lack of adequate knowledge of converted ICT officers in the territories.
Identify the expected results to be achieved	The ICT Department wants to enhance the productivity of converted ICT officers to reduce the failure rate of ICT projects.
KMS processes	Improve knowledge sharing between skilled and converted ICT officers.
Organizational philosophy and culture	<p>All ICT officers are mandated to join the Yahoo user group (yahoo-ICT@yahoogroups.com) for knowledge sharing on ICT operations and project implementation. Operational guides on system application deployment are shared only through the knowledge-sharing platform.</p> <p>Officers are directed to ask questions on ICT operations and projects through the platform and answers are provided through the platform. Learning and sharing of best practice on ICT services and projects are carried out through the platform.</p> <p>Instructions and updates of systems and applications are carried out on the platform. All communications (memos, circulars, notices, etc.) concerning ICT are carried out through the knowledge-sharing platform.</p>
Learning	Staffs are directed to share and learn from one another through the Yahoo-ICT user group. Staff are advised to open their mail box and read their mail on the platform

	<p>every day.</p> <p>An error log template was designed for documenting best practice. All discussions on ICT operations, services and projects are carried out through the platform. Learning is promoted through the platform.</p>
Knowledge	<p>Staff forwards their experiences, challenges and solutions through the KMS platform, so individual knowledge is institutionalized into departmental knowledge.</p> <p>A KM team was set up to facilitate and promote the knowledge-sharing programme. All the contributions on the KMS platform are vetted by the team.</p> <p>Training in knowledge management was organized for all the ICT officers to create awareness of knowledge sharing and how to use the technology solution provided for knowledge sharing.</p> <p>The Director of ICT was nominated as the project sponsor. Staffs are motivated to make a meaningful contribution by sending them on training and official duty to earn extra money. Staffs that contribute in the knowledge sharing are acknowledged.</p> <p>NIPOST management approved a budget for the deployment of the entire infrastructure necessary for the efficient implementation of the ICT project. Communication and collaboration is facilitated through the platform.</p>
Human–social	<p>Training was organized for ICT officers on knowledge management. The training focused on how to learn and share knowledge from other experiences.</p> <p>The ICT operational requirements were analysed and the management approved</p>

	the procurement of the required infrastructure.
Technology	<p>A Yahoo user group (yahoo-ICT@yahoogroups.com) is the chosen technology solution in the department for knowledge sharing, learning and communication among staff.</p> <p>Interoperability and system integration are not a problem, since all officers are familiar with the Microsoft Windows operating system.</p> <p>The technology solution is free; it does not involve an additional cost for the department. Familiarity with the Microsoft Windows environment makes the platform user-friendly and scalable to other Microsoft products, such as Microsoft Shared Point.</p> <p>ICT infrastructures, such as the output system and Internet connectivity, are deployed for each ICT office to facilitate access to the KMS platform.</p>

7.7 Benefits of the Knowledge Management System

The benefits of the knowledge management system used include the following:

- (1) It is free and simple to use.
- (2) Officers with challenges are able to obtain solutions from their colleagues.
- (3) Officers with experiences are able to share them with their colleagues.
- (4) Skilled officers can give support to colleagues without travelling.
- (5) The efficiency of the converted officers has improved.
- (6) Officers are able to learn from one another.

7.8 Obstacles to Implementing the Knowledge Management System

During the implementation of this project, some problems were observed as challenges to the implementation of the knowledge management system. These challenges include:

- (1) The lack of stable Internet connectivity for communication and knowledge sharing.
- (2) The lack of a stable electricity supply to power the ICT infrastructure.
- (3) The human cultural attitude towards knowledge sharing.

7.9 Findings and Analysis of the Case Study

The methods adopted for this survey were presented in chapter six. Two evaluation methods were used to evaluate the effectiveness and efficiency of the knowledge management system used, as well as the staff's satisfaction level. The two evaluation methods were questionnaires and interviews. The questionnaire was distributed by e-mail to officers in the territories. The questionnaire was chosen as a tool for data collection because of the geographical distance between the researcher and the ICT officers. The questionnaire is shown in appendix C. Thirty-two questionnaires were administered and twenty-eight were completed and returned. Follow-up interviews were conducted with all the management staff of the ICT Department at the corporate headquarters. The interviews were recorded and documented. The aim was to collect the opinions of management staff and feedback on the knowledge management system implementation. The interview questions are as below:

- (1) What is your name and your job schedule?
- (2) How long has the KMS been implemented in the ICT Department?

- (3) What are the objectives of implementing the KMS in the department?
- (4) Do you think the department has achieved the objective of implementing the KMS?
- (5) Does knowledge sharing help in the day-to-day routine work of your staff?
- (6) What are the challenges of implementing the KMS in the department?
- (7) What are the benefits of implementing the KMS in the department?
- (8) Do you think knowledge sharing has helped to enhance the staff performance in the department?

The analysis of the completed questionnaires is shown in figure 9.1 and reports shows that 95% of the respondents have attended some form of training on the knowledge management system (see question 1). They understand the concept of knowledge management system and have been using it for at least 12 months.

The KMS platform deployed in the ICT Department is mainly (89%) used for knowledge sharing and communication (see question 6). The technology adopted is very simple and easy to use (see question 7). It is a Microsoft Office operating system environment, with which members of staff are familiar and which they were using. There was no additional cost for deploying the knowledge management system. There were no issues of interoperability and system integration. The system is a web-based solution that can be easily deployed and accessed.

The system promotes collaboration and communication among the ICT staff (see question 13). It allows staff to share their experiences with colleagues from different points of view (see questions 10 and 11). The content and context of the knowledge shared are moderated by the ICT experts (KM team).

The system helps to institutionalize individual knowledge into departmental knowledge. Staff can always obtain help through the system to resolve their

operational problems (see question 9). A template was developed to document the knowledge acquired by staff. The template guides how knowledge should be documented and staff were trained and encouraged to document only relevant information that can be actionable. This system helps staff to enhance their performance and productivity on the job (see question 12).

It is generally agreed that the system has contributed to the operational efficiency of the department, the failure rate of projects has reduced and the ICT staff in the territories can now effectively support and supervise ICT projects. This system has also reduced the frequency of staff movement to give technical support in the territories and consequently reduced the department's expenditure on travel and transport (see questions 14 and 17).

Certainly, there is no perfect system to tackle or solve all of the operational problems of an organization. However, this system has helped to reduce drastically the operational bottlenecks and to enhance the efficiency and effectiveness of operations in the ICT Department of NIPOST. Consequently, it has positively affected the entire organizational business operation.

Have you attended any training in knowledge management?	Yes 25	No 3			
Is the training helpful in your job?	25	1			
Do you need further training in knowledge management?	26	2			
Which application do you use for knowledge management?	Microsoft Shared Point 3	YahooGroup(Yahoo_ICT) 26	Knowledge Postal 5	NIPOSTWebsite 4	
How long have you been using the system?	1–3 Months 0	4–6 Months 0	7–12 Months 6	12–24 Months 22	
What do you use the system for?	Knowledge Sharing 25	Knowledge Capturing 6	Knowledge Storage 3	Communication 10	Knowledge Retrieval 5
	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
The system is user-friendly	24	4	0	0	0
The information in the system is relevant to my job	25	3	0	0	0
The information helps me to do my job better	26	2	0	0	0
The system allows me to learn from others	25	3	0	0	0
The system allows me to share my experiences with others	26	2	0	0	0
The system has enhanced my performance	21	5	0	2	0
The system has enhanced collaboration in the ICT Department	25	3	0	0	0
The system has reduced staff movement for support services	19	8	1	0	0
The system promotes the sharing of experiences within staff in ICT	25	3	0	0	0
The system contributes positively to staff efficiency	26	2	0	0	0
It has reduced the cost of transporting officers for problem solving	25	2	1	0	0
It has increased the knowledge base of officers in the ICT Department	24	3	1	0	0
It has reduced the risk of accidents due to officers travelling	19	7	2	0	0

Figure 7.2 Analysis of the KMS implementation in the ICT Department

7.10 Summary

No system is perfect when it is being built. It is therefore essential to continue improving the overall efficiency and effectiveness of the system. It is obvious that information technology plays an important role in the successful implementation of a knowledge management system. The communication, collaboration and storage capabilities of networked computers make computational power an important enabler of effective knowledge work.

The lessons learned from the ICT perspective are planned to be extended to the entire organization. This involves linking the employees of NIPOST to share their knowledge and experiences. According to Bock et al. (2005), the movement of knowledge across individual and organizational boundaries into and from repositories and into organizational routines and practices is ultimately dependent on employees' knowledge-sharing behaviours.

An organization-wide knowledge management system will be achieved by deploying a more efficient knowledge management system, such as Microsoft Shared Point. This will facilitate the use of the advanced features of a KMS for capturing, storing and sharing information and knowledge quickly within and outside the organization.

Knowledge management is a continuous process; there is no completion and deadline for knowledge management. It is hoped that the culture of knowledge sharing will be promoted while discarding the concept of knowledge hoarding with a view to making NIPOST a knowledge-based organization.

7.11 Case Study 2: Improving the International Postal System's Quality of Service through Knowledge Sharing

In 1995, the Postal Technology Centre (PTC) of the Universal Postal Union (UPU) developed and hosted the International Postal System (IPS). The IPS is a software application that provides postal administrations with computerized means of capturing and transmitting all types of outbound and inbound

international mail (EMS, parcels and registered mail) and facilitates electronic data exchange (EDI) between postal administrations and the UPU.

It provides a means for postal administrations to obtain an accurate and comprehensive view of mail movement at every point from origin to destination, including transit offices of exchange, international carriers and customs.

The IPS is designed to help postal administrations improve the quality of service of international mail through the measurement of the mail delivery cycle and end-to-end monitoring of items. This is to provide international mail customers with the ability to track and trace their mail while in transit.

To achieve this objective, the UPU developed standards for the capturing and transiting of all activities (events). The performance of each postal administration is measured each month by the UPU. Postal administrations that meet set standards are given bonuses. Those that fail to meet the standards lose the bonus and are penalized.

7.12 IPS Implementation in NIPOST

As a member country of the UPU and to meet the international standard for mail delivery, NIPOST deployed the IPS in 2006.

The IPS application has a front-end and a back-end. The back-end resides at the International Mail Processing Centre (IMPC) in Ikeja, Lagos. The front-ends are deployed in all the general post offices (GPOs) in the territories. At the front-end, the Postal Officers capture the relevant events as specified in the IPS standard and transit to the national database at the IMPC. The back-end application aggregates the data captured from the GPOs and at the International Mail Processing Centre and transmits to the Postal Technology Centre (PTC) at the UPU.

After the deployment of this application, training sessions were given to the technical and operational staff of NIPOST. Computers were deployed at the IMPC and the GPOs for the implementation of the IPS. However, the

implementation of the IPS only started in 2008, due to some technical and operational challenges.

7.13 IPS Implementation Challenges in NIPOST

The implementation of the IPS faced four major challenges:

1. Irregular power supply: In Nigeria, many cities experience power failures, so data capture and transmission become a major challenge. To overcome this challenge, NIPOST installed generators at the IMPC and some GPOs and also procured and supplied laptops for all the GPOs for use in the case of power failure.
2. Unstable Internet connectivity: The Internet connectivity at both the IMPC and the GPOs is via KU-BAND VSAT. The Internet speed at times is very slow, especially during the rainy season, making it difficult to offload and transmit data to the national database. In addition, at the IMPC, the transmission to the UPU frequently times out as a result of poor Internet connectivity. To overcome this challenge, NIPOST deployed a fibre-optic Internet connection at the IMPC and at some high-traffic GPOs. This resulted in better Internet connection. As a back-up for Internet connectivity, 3G internet modems were supplied to all the other GPOs.
3. Low computer literacy: The computer literacy level in NIPOST is still very low, especially among the postal operation staff. Because of this challenge, some GPOs do not capture events as required. Those that are captured are captured wrongly most of the time. To overcome this challenge, NIPOST organized basic computer literacy training for its entire postal operations staff to retrain them on the use of the IPS.
4. The regular transfer of trained officers to new posts without consideration for the skills acquired, which leaves skill gaps and causes low efficiency when new officers take over.

Despite the efforts mentioned above by the NIPOST management, NIPOST failed to meet the performance target of 85% of the UPU standard from 2008 to

2012, especially for its parcel and registered mail services. The consequence of this is that NIPOST has continued to lose revenue for its international mail services as a result of the penalties imposed.

This situation became a challenge to the NIPOST management, who setup a committee in November 2012 to determine the causes of the low IPS performance and recommend a way forward. The committee reported that the reason for this low performance was mainly attitudinal, the lack of adequate knowledge of the operations of the IPS and the lack of understanding of the importance and consequences of the IPS for NIPOST. The committee recommended more training and knowledge sharing of best practice among staff.

7.14 KMS Implementation for the International Postal System

To promote knowledge sharing on the IPS, a five-man team was set up, comprising staff from operations and ICT and headed by Mr Bala Wambai (General Manager, International Operations). The ICT department designed a KMS (see fig. 7.2) for knowledge-sharing. They also provided user names and passwords to all the members and provided training for the end-users on the use of the KMS platform. The mandate of the team was to ensure improvement in the quality of service of the IPS through learning and knowledge sharing.

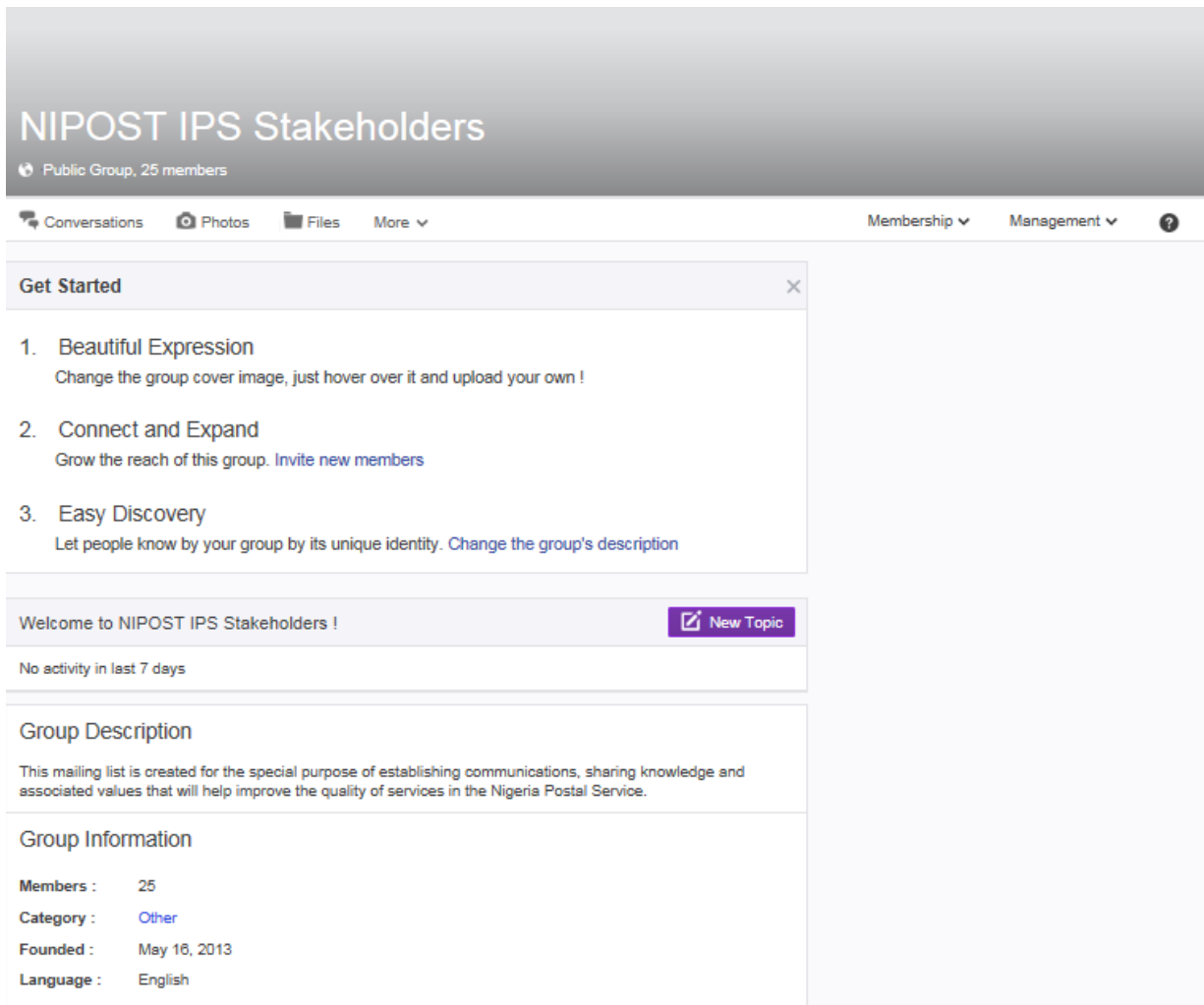


Figure 7.3: KMS designed for IPS stakeholders for knowledge sharing.

To achieve this objective, the KMPOST framework was adopted as the guideline for the implementation of the KMS, as shown below:

Table 7.2 Description of KMS implementation using the KMPOST model

KMS methodology procedure	KMS implementation using the proposed integrated KMS framework
Identify the business problem	NIPOST's quality of service performance for the IPS is below the UPU standard target of 85%. Hence, NIPOST loses revenue from its international mail services and also pays penalties.
Identify the expected results to be achieved	NIPOST wants to improve its quality of service of the IPS to meet the UPU standard of 85% and above and to receive bonuses for international mail services.
KMS processes	Increase the knowledge sharing of IPS operations among operational and support staff. The aim is to enhance staff productivity.
Organizational philosophy and culture	<p>All operational staff are mandated to join the Yahoo user group (yahoo-IPS@yahoogroups.com) for knowledge sharing on the IPS. All manuals, guides, standards and so on regarding the IPS are shared only through the knowledge-sharing platform.</p> <p>Staffs are directed to ask questions on the IPS through the platform and answers are provided through the platform. The learning and sharing of experiences on the IPS are carried out through the platform.</p> <p>All communications (memos, circulars, notices, etc.) concerning the IPS are carried out through the knowledge-sharing platform.</p>
Learning	Staffs are directed to share and learn from one another through the Yahoo-IPS user group. Staffs are advised to open their mailbox and read their mails on the platform

	<p>every day.</p> <p>Training materials are forwarded to their mail box and all discussions on the IPS are carried out through the platform. Learning is promoted through the platform.</p>
Knowledge	<p>Individual knowledge is captured as organizational knowledge. A KM team was set up to promote knowledge sharing among the staff. The KM team vets all the contributions on the platform to ensure that the information provided is relevant and actionable.</p> <p>Several workshops were organized to create awareness of the concept of knowledge sharing and IPS operations.</p> <p>The management approved a budget for the deployment of all the logistics required for the efficient implementation of the IPS project. To achieve this goal, the Postmaster General/CEO nominated the Director of Mail Operations as the project sponsor. Collaboration between the operations staff and all the relevant staff was encouraged.</p>
Human–social	<p>Requirement analysis was conducted to ensure improvement in the quality of service. A train-the-trainer programme was organized for the relevant stakeholders (ICT, EMS, Parcels, IPA, Finance and Investment).</p> <p>A project leader was nominated – Mr Bala Wambai. The leader evaluates the monthly quality of service performance of the IPS from the UPU. He reviews the IPS processes to enhance the quality of the service. All discussions concerning the IPS are channelled through the project leader.</p>
Technology	<p>A Yahoo user group (yahoo-IPS@yahoogroups.com) is the chosen technological solution for the project to facilitate knowledge sharing, learning and</p>

	<p>communications among staff. The necessary infrastructure, such as the computer system, scanner, printer, computer consumables and alternative power supply are deployed.</p> <p>Internet connectivity through fibre-optic, VSAT and Internet modems is deployed to facilitate accessibility.</p> <p>The technology adopted is cost-effective and user-friendly, because the staff are used to the Microsoft Windows environment. It is also scalable; it can be upgraded to Microsoft SharePoint without concerns about system integration and interoperability.</p>
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The implementation of the KMS framework started in January 2013. Since then, three training sessions have been held. Officers were requested to ask questions and share their experiences and best practices online. This approach resulted in improved performance, as shown in the UPU monitor performance report for the year 2013.

A comparative analysis of the UPU reports on NIPOST's IPS performance on the quality of service of parcel items before 2012 and during 2013 as a result of the implementation of KMS is presented in figure 7.3 and figure 7.4. Figure 7.3 shows the parcel performance before the implementation of the KMS. NIPOST met the performance target of 85% only in September, October and November 2012, while the performance in January to August 2012 is below the target. The implication of this is that NIPOST lost revenue from international mail services for nine months in 2012. Figure 7.4 shows the parcel performance during the implementation of the KMS. The performance has visibly improved and the figure shows that the performance in 2013 was above 85% every month.



Item ratio

User: NGA_Parcel

QCS Mail 2.1
© Copyright UPU 2007-2009

Date: 2013-09-30 10:10 (UTC/GMT)

Sender (Office)	Recipient (Office) NGA	Mail class C	Ratio H/I over D	Product *	Year 2013– 2013	Test No.
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				Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
(All)	NGA	2012	H/I over D	58.2%	78.8%	81.6%	82.6%	81.5%	83.8%	80.3%	84.4%	84.9%	88.3%	85.5%	73.0%
			D	38714	4,636	4,521	3,540	3,693	4,074	3,903	3,986	3,781	4,142	4,846	5,517
			D, no H/I	1,619	984	834	617	684	660	768	620	572	486	702	1,488

Source: UPU Monthly Parcel Performance Report (2012)

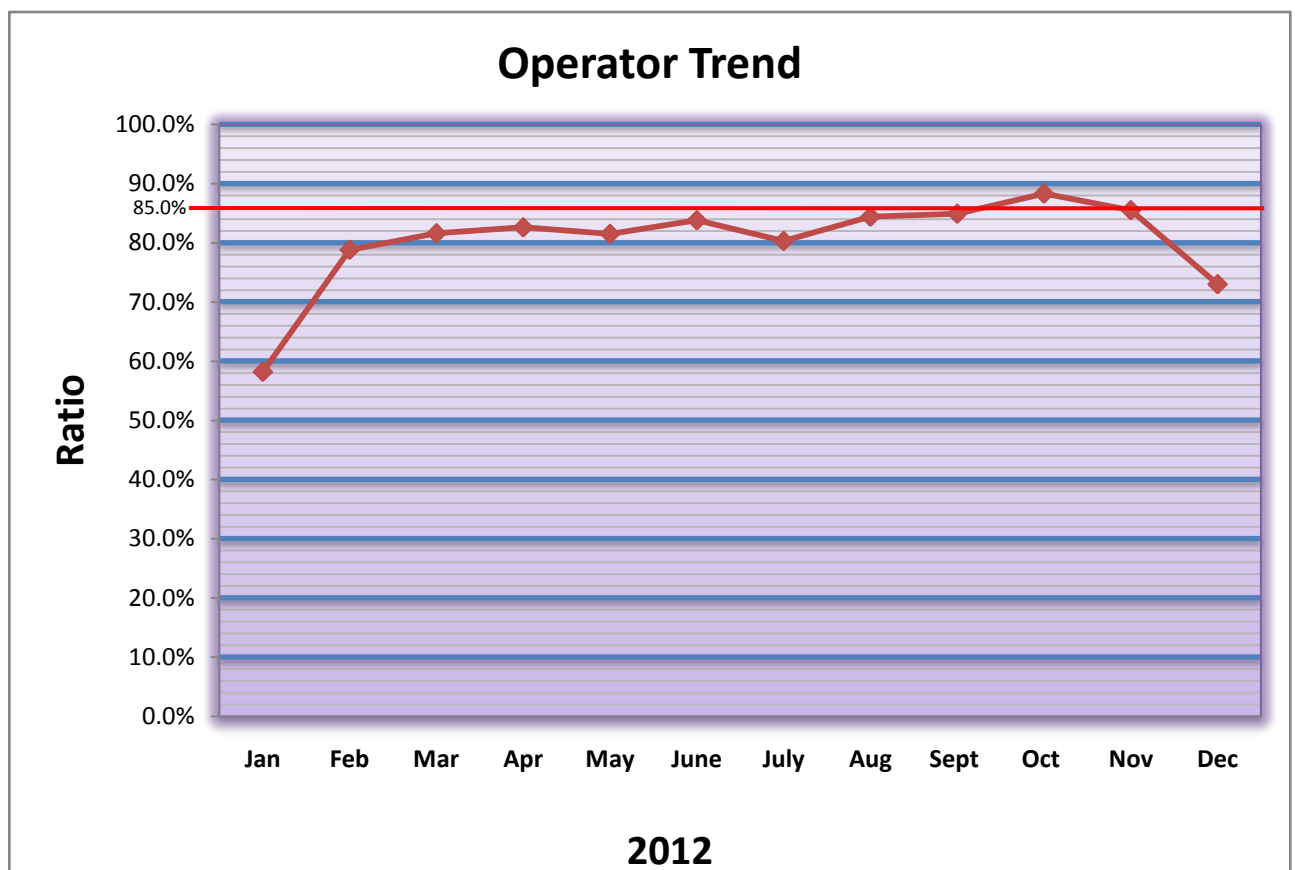


Figure 7.4 Parcel performance: January to December 2012



Item ratio

User:

NGA_Parcel
QCS Mail 2.1
© Copyright UPU 2007-2009

Date: 2013-09-30 10:10 (UTC/GMT)

Sender (Office)	Recipient (Office) NGA	Mail Class C	Ratio H/I over D	Product *	Year 2013– 2013	Test No.
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				Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.
(All)	NGA	2013	H/I over D	75.9 %	93.0 %	88.4 %	91.7 %	90.8 %	91.1 %	90.7 %	89.3 %
			D	3,400	5,218	3,764	3,876	3,607	3,761	4,512	4,101
			D, no H/I	819	367	438	323	333	335	418	440

Operator Trend

Source: UPU Monthly Parcel Performance Report (2013)

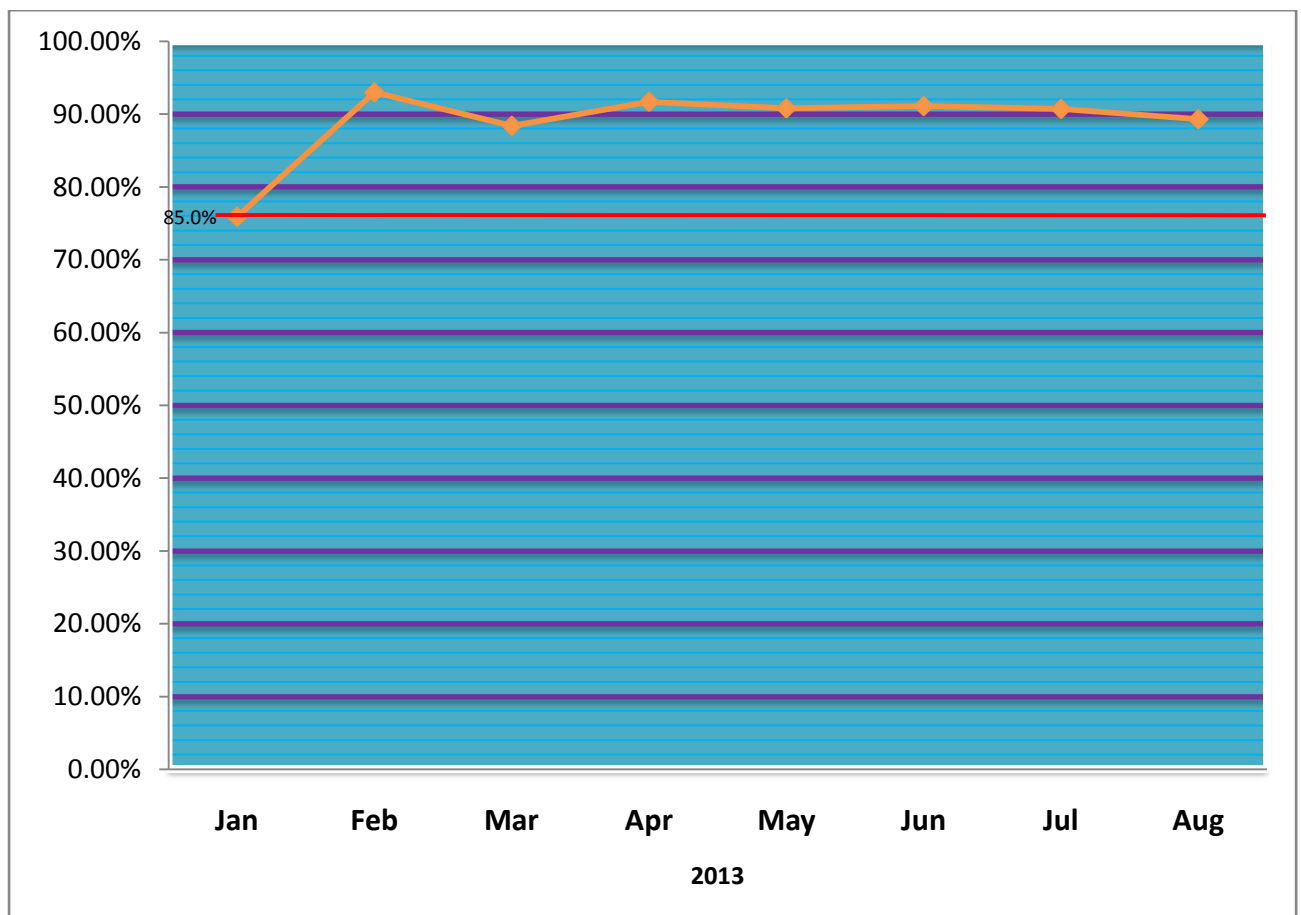


Figure 7.5 Parcel performance: January to August 2013

7.15 Summary

This chapter presents two case studies conducted in NIPOST to evaluate the KMPOST framework. The two case studies are: (1) the implementation of the KMS in the ICT Department of NIPOST; and (2) improving the International Postal System's quality of service through knowledge management.

The knowledge problem area in case study 1 was the low productivity of the converted ICT staff. The KMPOST framework was adopted to design a KMS for the sharing of knowledge among the ICT staff. The KMS designed is used as a tool for knowledge management practice in the ICT department for at least one year. The findings from the case studies showed that the KMS has significantly enhanced the staff productivity in the ICT Department (see section 7.9).

The knowledge problem area in case study 2 was the low operational efficiency. The KMPOST framework was adopted to design a KMS for the sharing of knowledge among the operational staff. The KMS designed is used as a tool for knowledge management practice in the operational department for eight months. The findings of the analysis of the case study showed that the KMS has significantly improved the quality of service of the IPS in NIPOST (see section 7.14).

Despite the fact that the two case studies yielded positive results, it is worth noting that the case study conducted was unable to validate all the factors and attributes presented in the KMPOST framework. This is considered a limitation of this research work.

The next chapter presents the conclusion and recommendations of this research work.

CHAPTER EIGHT

Conclusion and Recommendations

8.1 Introduction

This chapter presents an overall summary of the research undertaken. It focuses on showing how the results of the study relate to the original research questions and objectives set out in this thesis. The chapter discusses how the research objectives were achieved and the approach adopted to evaluate the KMPOST framework. It presents the different implications of this research for the postal sector and academia alike. It further outlines the contributions and the limitations of the research work. Finally, suggestions for further research are made.

8.2 Meeting the Research Objectives

The research objectives (see chapter one) stated for this research work is achieved as listed below:

- (1) The research carried out a comprehensive literature review on knowledge management, knowledge management systems, knowledge management implementation and knowledge management system frameworks (objective one). This review helped the researcher to gain a better understanding of the issues, strengths and weaknesses of the existing KM frameworks as presented in chapters two.
- (2) Based on the literature review, five KM frameworks were selected as a benchmark for further analysis (objective two). A comparative analysis of the five KM frameworks further revealed the gaps in the existing KM frameworks. The frameworks also formed the basis for the development of the KMPOST framework (chapter 5).

- (3) The research carried out a preliminary study on KM practice in NIPOST (objective three). This study revealed the factors militating against effective KM practice in NIPOST that needed to be considered in developing a KM framework for the postal sector (chapter three).
- (4) The research also carried out a study on the UPU's postal strategy plans for 2009–2012 and 2013–2016. This study aimed to gain a better understanding of the knowledge problem areas of the postal sector strategy focus (objective four). The objectives of the postal strategy plans and the programmes were reviewed and critical factors for achieving the objectives were identified (chapter three).
- (5) Based on the literature review conducted, the preliminary study on KM practice in NIPOST and the study on the postal strategy plans (2009–2016), the KMPOST framework was developed (objective five). The KMPOST model was presented in chapter six.
- (6) The KMPOST framework was evaluated based on experts' opinions (objective six). The analysis and findings of the survey were presented in chapter five.
- (7) Lastly, NIPOST was chosen as a case study to evaluate the KMPOST framework (objective seven). Two case studies were conducted; the analysis and findings of these case studies were presented in chapter seven.

8.3 Evaluation of the KMPOST

The KMPOST framework was developed based on some assumptions and theories from the studies conducted. The KMPOST framework was then subjected to assessment by KM domain experts in academia and industry. Based on the assessment conducted through the questionnaire and interviews, the initial KMPOST framework was adjusted.

A KMS was designed and implemented in NIPOST to evaluate the KMPOST framework. A case study was explored during the field investigation on two business processes in NIPOST. First, the KMS was implemented in the ICT Department, aimed at enhancing staff productivity, and secondly, it was implemented in the Operations Department, aimed at improving operational efficiency. The findings from the two case studies showed that KMS has helped to enhance staff productivity in the ICT Department and improve the quality of service (QOS) of the International Postal System (IPS) in NIPOST (see chapter seven).

Although not all the factors and attributes of the KMPOST framework have been tested in the two case studies in a real-life context, as mentioned earlier, it is believed that the evaluation of the remaining attributes could be performed relatively easily.

8.4 Research Implications

8.4.1 Academia

The real value of the KMPOST framework developed in this research could be highlighted by distinguishing its different roles as descriptive and empirical.

First, the KMPOST framework can be used as a conceptual model that could permit researchers to investigate further the factors and attributes that could potentially influence effective knowledge management practices in the postal industry.

Secondly, the KMPOST framework has the potential to guide empirical research in the development of the KMS in both the Nigerian Postal Service and the postal sector in general. It provides a comprehensive view of how knowledge-related activities could be improved within the postal industry. This requires further studies to be undertaken to evaluate this framework in other postal organizations.

8.4.2 The Postal Industry

The most straightforward contribution of this research, as stated earlier, is the benefits to the postal industry in general and the Nigerian Postal Service in particular. The theoretical contribution concerns the body of knowledge on knowledge management systems as a whole and their implementation in a postal context. This research is believed to be the first of its kind dedicated to the development of a KM framework within the postal sector and NIPOST in particular. Prior to undertaking this research, it appears that no explanations of frameworks or models had been specifically developed for the postal sector.

Therefore, this research takes a significant step forward by providing a comprehensive and detailed framework grounded on and supported by theoretical and empirical investigations for the development of a KM framework for the postal sector.

8.5 Contributions of the Study

The study identified and described the factors and attributes that are considered essential for implementing KM in the postal sector. The research provided an empirical assessment of the essential attributes of KM implementation in the context of NIPOST. Finally, it introduced a conceptual framework for the postal sector.

The study also provided a framework (KMPOST) for designing KMS to exploiting knowledge in an innovative way in the postal sector. It also showed that KM could enhance staff productivity and improve operational efficiency in NIPOST.

Moreover, the KMPOST framework is expected to provide an excellent foundation for future research on KMS implementation in the postal sector in general.

This study also provided contextual and situational insights into KM implementation in the postal sector in general and the Nigerian Postal Service in particular.

The lessons emerging from this study provided useful insights into the importance of the different factors and attributes that formed the building blocks of the KMPOST framework.

Again, these factors and attributes can be further “tuned” in future research to provide more analytical frameworks that could better serve the postal sector as a whole rather than being focused on one single organization (NIPOST).

The KMPOST framework proposed in this research should enable KM practitioners to manage knowledge much more effectively, particularly in the postal sector.

The KMPOST framework proposed could also be beneficial to other organizations in other industries that need to benefit from KM implementation to improve their organizational efficiency, productivity and competitive advantage. Specifically, the KMPOST framework could also enable NIPOST to apply knowledge management to address the problems of an aging workforce and low performance and productivity and create an improved learning culture in a widely distributed workforce.

8.6 Limitations of the Study

As is the case with other research studies, this research has its own limitations that need to be addressed. These limitations are mainly related to the broadness of the topic under investigation, the lack of homogeneous organizational experiences and the limited access to information from other postal organizations. The limitations can be summarized as follows:

1. The research attempted to develop a social-technical KM framework, a feature that demands broadening of the scope of the study in reviewing a large body of relevant literature and collecting a huge set of appropriate

data from different postal organizations. However, while the researcher endeavoured to meet this requirement by reviewing various bodies of literature and seeking different types of data from both questionnaire and interview sources. It is not possible to claim that the empirical investigation of this study has identified all the issues related to this perspective.

2. The KMPOST framework was generally accepted by experts as a KM framework with comprehensive factors and attributes. However, not all the attributes of the KMPOST framework were evaluated in the case studies conducted. Nevertheless, as the framework has been successfully evaluated in part, the evaluation of the remaining factors and attributes could be performed relatively easily.
3. The evaluation of the framework was limited to only two business processes within NIPOST; the research was not able to evaluate the framework on the totality of NIPOST's business processes as the organizational structure did not allow this. However, the two chosen processes were representative of typical procedures and operations.
4. The practice of KM has inherited the confusion that surrounds its concepts. Furthermore, the respondents have different perspectives on KM and the lack of a common language regarding KM may cause bias in the data collection process.

8.7 Recommendations for Future Research

As the number of different organizations implementing KM continues to grow, further research is needed to expand the findings from this study and to provide more conclusive answers. Despite the attempts of the KMPOST framework to be exhaustive and cover a broad area of the implementation of KM systems in the postal sector, further research should focus on evaluating the system or framework in other postal organizations. Therefore, it is suggested that a

number of recommendations should be considered in future research as follows:

1. Through the review of the literature, it was found that there is a lack of common and standardized terms and definitions for KM. This is reflected in the organizational perceptions of KM concepts and practices. Thus, the concept of KM is not fully developed, embedded and comprehended by organizations. Therefore, there is a great need for more research that solicits the opinions and perceptions of both academics and practitioners on KM definitions and terms and develops clearer and common use of the KM terms.
2. It may not be justifiable to generalize this framework for designing a knowledge management system based on the study of a single organization (NIPOST). Therefore, there is a need to evaluate the proposed framework in other postal organizations, so that a more refined generalization can be made.
3. The factors and attributes of the KMPOST framework were not completely evaluated in the case studies conducted in NIPOST. Hence, the relevance of these factors and attributes to the implementation of a KMS could be examined in more detail in further studies.
4. Further research should examine how effectively the KMPOST framework addresses the challenges of implementing previous KMS frameworks. Future research should also find out how effectively the KMPOST framework could be used in other organizations
5. The KMPOST framework was developed from an interdisciplinary perspective. It draws upon a vast diversity of fields, like organizational science, cognitive science, information technology, sociology and so on. Therefore, further research is required to find out whether the issue of the imbalanced approach in existing KM frameworks is adequately addressed in the KMPOST framework.

6. It would be worthwhile for researchers to explore how the concepts and practices of KM are being integrated with other emerging knowledge management approaches, like customer relationship management (CRM) and e-commerce, in the postal sector.

8.8 Conclusions

The purpose of this research was to explore the possibility of successful implementation of a KMS in the postal sector. The research developed a framework that could improve the KM practices in the postal sector.

The Nigerian Postal Service was chosen as a case study to evaluate the KMPOST framework, and the findings from this case study showed a significant impact on the KM practice.

This research is believed to be the first of its kind to be dedicated to the development of a KM framework within the postal sector and in NIPOST in particular.

The framework could be used as a conceptual model that could permit researchers to investigate further the factors and attributes that could potentially influence effective knowledge management practices in the postal sector.

This research has provided a framework (KMPOST) for implementing and exploiting knowledge in an innovative way, taking into consideration the critical issues of KM implementation in the postal sector. It has also shown that KM could enhance staff productivity and improve operational efficiency in NIPOST.

Therefore, the development of the KMPOST has contributed to the body of knowledge by presenting to the postal sector a framework that was developed with comprehensive attributes that have been ignored by the existing frameworks. It also serves as a basis for further research on KM implementation in the postal sector.

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APPENDIX A: RESEARCH QUESTIONNAIRE

London Metropolitan University, Faculty of Computing, KMRC

INTRODUCTION: With the explosive growth of interest in knowledge management, different KMS frameworks have been produced by different researchers, based on their background and area of interest, for the successful implementation of knowledge management initiatives. However, the current literature states that the existing KMS frameworks do not provide a complete and generalized framework consisting of key fundamental attributes of KM initiatives. Therefore, based on a comprehensive literature review and analysis of some selected KMS frameworks, an integrated KMS framework built on a multidimensional approach is developed by aggregating attributes that are already available from academics and practitioners, as shown below.

The proposed KMS framework shows that an integrated KMS framework should consist of three layers: a sustainable layer (organizational philosophy and culture), a core layer (technology, human–social and knowledge) and an outcome layer (efficiency, innovation and competitive advantage).

The questionnaire below aims to obtain scientific feedback on the acceptability and perceptions of experts regarding the proposed integrated KMS framework. You are therefore kindly requested to give sincere and accurate responses to the questionnaire or statements below to enable us evaluate the proposed KMS framework. Your candid responses will be treated confidentially and used strictly for academic purposes only.

PROPOSED INTEGRATED KMS FRAMEWORK

Efficiency and Effectiveness		Innovation		Competitive Advantage	
<u>Technological System</u>		<u>Human-Social System</u>		<u>Knowledge System</u>	
<ul style="list-style-type: none">- Infrastructure- Technology Solutions- Accessibility- Data Management- System Functionality- Interoperability- System Integration- Scalability- Cost-Effectiveness- User-Friendliness- Security- Architecture- Information Flow- Multi-media- Web-Based Solution- Agent-Based System		<ul style="list-style-type: none">- Experimentation- Diversity- Alignment- Environmental Analysis- Adaptability- Change Management- Education and Training- Stakeholder Forum- Government Policy- Collaboration- Communication- Self-Leadership- Re-engineering- Content and Context- Network of Experts- Psychology		<ul style="list-style-type: none">- Institutionalism- Motivation- Mission- Strategy- Budget- Integration- Trust- Sponsorship- Functionality/Task- Documentation- Knowledge Template- Leadership- Organizational Structure- Data Protection and Privacy- Measurement- Awareness	
Learning					
Human Creativity		System Thinking		Actionable Information	
Organizational Philosophy and Culture					
Vision	Plan	Policies	Procedures	Process	Culture

SECTION A: PERSONAL INFORMATION, PLEASE TICK AS APPROPRIATE

1. Where is your organization located?

☐

UK

☐

USA

☐

Asia

☐

Africa

☐

Russia

2. Your organization can be classified as:

☐

Academic

☐

Service/Government

☐

Private Industry

☐

Consultancy

☐

Others

3. What is the size of your organization's workforce?

☐

10–50

☐

51–100

☐

101–500

☐

500–1000

☐

1000 and above

4. Are you involved in KMS practice in your organization?

Yes

☐

No

☐

5. If yes, what is your role in KMS practice in your organization?

☐

User

☐

Trainer

☐

Developer

☐

Administrator

☐

Consultant

6. What is your level of expertise with regard to the KMS?

☐

Expert

☐

Very familiar

☐

Familiar

☐

Novice

☐

No idea

7. What are your years of experience in KMS practice?

☐

1–2yrs

☐

3–5yrs

☐

6–10yrs

☐

11–15yrs

☐

16–20yrs

8. Have you been involved in any research on KMS?

Yes

☐

No

☐

9. Your highest level of education is:

☐

Diploma

☐

1st degree

☐

Master's degree

☐

PhD degree

10. Are you willing to be contacted for further inquiries on KMS issues?

Yes ☐

No ☐

Your e-mail

address:.....
.....

Your telephone

no.:.....
....

Your

name:.....
.....

Your

organization:.....
.....

Your present

position:.....

SECTION B:ACCEPTABILITY OF THE PROPOSED KMS FRAMEWORK

Instruction: Please read each statement and give your opinion by ticking the box provided below.

1. An integrated KMS is the best approach to today's dynamic business environment.

☐ ☐ ☐ ☐ ☐
Strongly Agree Agree Disagree Strongly Disagree No Idea

2. The KMS principle and concept should be embedded into the organizational philosophy.

☐ ☐ ☐ ☐ ☐
Strongly Agree Agree Disagree Strongly Disagree No Idea

3. Culture influences the practice of KMS in an organization.

☐ ☐ ☐ ☐ ☐

Strongly Agree Agree Disagree Strongly Disagree No Idea

4. The proposed KMS framework takes into consideration the key factors of KMS practice.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

5. Learning should be an integral part of a KMS framework because knowledge management is a continual process of incremental improvement and evolution and not a one-time effort.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

6. Knowledge management and learning are critical factors for organizational long-term survival.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

7. System thinking is important for a KMS framework because it facilitates the linkage between the KM initiative and the strategic goals and objectives of an organization.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

8. Utilization of the principle of actionable information, dynamic thinking and human creativity enhances the level of efficiency of KMS practice in an organization.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

9. Competitive advantage, innovation and efficiency are the key benefits of implementing a KMS in an organization.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

10. The components of an integrated KMS should be a human–social system, technological system and knowledge system.

☐ Strongly Agree
 ☐ Agree
 ☐ Disagree
 ☐ Strongly Disagree
 ☐ No Idea

11. The proposed framework truly is an integrated KMS framework.

☐ Strongly Agree
 ☐ Agree
 ☐ Disagree
 ☐ Strongly Disagree
 ☐ No Idea

SECTION C: PERCEPTION OF THE ATTRIBUTES OF THE PROPOSED KMS FRAMEWORK

1. Please rate the following attributes in terms of their importance to the technological sub-system of a KMS.

	Very Important	Important	Less Important	Not Important	Not Sure
a. Infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Technological Solutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Data Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. System Functionality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Interoperability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. System Integration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Scalability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Cost-Effectiveness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. User-Friendliness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Accessibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Security	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Information Flow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Architecture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Multi-media	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- o. Web-Based Solution
- p. Agent-Based System

2. Comments/suggestions on these attributes:

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3. Please rate the following attributes in terms of their importance to the human–social sub-system of a KMS.

	Very Important	Important	Less Important	Not Important	Not Sure
a. Experimentation.....	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. Diversity	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
c. Adaptability	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
d. Change Management....	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
e. Stakeholder Forum	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
f. Environmental Analysis..	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
g. Education and Training .	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
h. Collaboration	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
i. Communication	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
j. Psychology	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
k. Self-Leadership	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
l. Re-engineering	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
m. Networks of Experts	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
n. Content and Context	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
o. Alignment	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
p. Government Policy	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

4. Comments/suggestions on these attributes:

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5. Please rate the following attributes in terms of their importance to the knowledge sub-system of a KMS.

	Very Important	Important	Less Important	Not Important	NotSure
a. Institutionalism	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. Functionality	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
c. Mission	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
d. Strategy	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
e. Sponsorship	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
f. Integration	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
g. Trust	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
h. Motivation	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
i. Budget	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
j. Organization Structure	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
k. Documentation	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
l. Organization Culture	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
m. Knowledge Template	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
n. Commitment	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
o. Measurement	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
p. Data Protection and Privacy	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

6. Comments/suggestions on these attributes:

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APPENDIX B

NIPOST – KNOWLEDGE MANAGEMENT SURVEY

Introduction

Knowledge management (KM) is currently receiving considerable attention in most forward-looking organizations and it is believed by most organizations that if it is implemented correctly with cultural buy-in from users and management, KM can improve the productivity and efficiency of an entire organization.

From a management science point of view, KM is considered as a tool for optimizing and integrating knowledge within the enterprise.

Therefore, the questionnaire below is aimed at understanding the level of knowledge management practice in NIPOST.

You are therefore kindly requested to give sincere and accurate responses to the questionnaire. Your candid responses will be treated confidentially and used strictly for the purpose of this research only.

This questionnaire is divided into three major parts, namely:

1. Awareness of knowledge management
2. Practice of knowledge management
3. Strategy for knowledge management

To this end, you are enjoined to read the questions carefully and tick (✓) the corresponding box describing your feelings, for example strongly agree, agree, strongly disagree and so on.

A. AWARENESS OF KNOWLEDGE MANAGEMENT (KM)

In my department/venture/territory	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1. Staff have a general understanding of the concept of knowledge management					
2. Our knowledge management practice consists of capturing, storing, sharing and applying knowledge					
3. Knowledge sharing is part of our routine work					
4. Knowledge sharing is seen as a strength and knowledge hoarding as a weakness					
5. Staff know how to capture new knowledge, store it and apply it					

6. Staff are aware of how to search for knowledge within and outside the organization in order to do their job					
7. Staff know how to search for knowledge in the organization in order to do their work well					
8. There is a knowledge management system that facilitates knowledge management practice in my department/venture/territory					
9. Staff understand the components or attributes of the knowledge management system					
B. PRACTICE OF KNOWLEDGE MANAGEMENT					
In your department/venture/territory					
(1) Staff share knowledge through					
a. Meetings/seminars/conferences					
b. Bulletins, post news, circulars, memos					
c. Internet (NIPOST new site)					
d. SMS alerts					
e. Multi-media					
f. Story-telling					
(2) Staff create knowledge through					
a. Departmental meetings					
b. Section meetings					
c. Unit meetings					
d. Group discussion					
e. Informal meetings					
f. Communication practices					
(3) Knowledge management practice is encouraged through					
a. Training and manpower development					

b. Research					
c. Collaboration work					
d. Partnership					
e. Communities of practice					
f. Strategic alliances					
(4) Successes and failures are recorded as lessons to be learned by staff					
(5) There is an effective cataloguing and archiving procedure for knowledge documentation					
(6) Staff always find it easy to access the right information to do their job					
(7) Good knowledge management practices like sharing, capturing and storing of knowledge are actively promoted daily					
(8) Staff are visibly rewarded for sharing their knowledge					
(9) There are value systems or a culture intended to promote knowledge sharing					
(10) Staff are encouraged to obtain knowledge from other industry sources, such as competitors, clients, suppliers, etc.					
(11) There are dedicated resources for detecting and obtaining external knowledge and communicating within the organization					
(12) Experienced staff are encouraged to transfer their knowledge to new or less experienced staff					
(13) Staff share experiences or best practice among colleagues at least once a month in the department/venture/territory					

C. STRATEGY FOR KNOWLEDGE MANAGEMENT

Implementation of the KMS in NIPOST will	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
1. Enable staff to accomplish their jobs more quickly					
2. Increase staff productivity					
3. Enhance staff effectiveness on the job					
4. Save staff time					
5. Allow more work to be done in the organization					
6. Enable the organization to react more quickly to changes in the workplace or customer needs					
7. Enhance speedy decisionmaking					
8. Improve the competitive advantage of the organization					
9. Protect the organization from loss of knowledge due to workers' departures					
10. Facilitate workers to be innovative					
11. Protect strategic knowledge present in the organization					

The importance of KMS to NIPOST includes:					
1. Increase knowledge sharing across the department and business units					
2. Improve workers' efficiency or productivity					
3. Improve customer or client relations					
4. Facilitate the development of new products or services					
5. Improve the quality of service of existing products or services to meet customer requirements					
6. Encourage innovation in the organization					
7. Prevent reinventing the wheel or duplicating effort					
8. Improve the corporate or organization memory and image					
9. Increase the staff ability to capture knowledge within and outside the organization					
10. Improve the staff involvement in workplace activities					

Name:

Department:

Location:

Tel./E-mail:

SECTION A. PERSONAL INFORMATION, PLEASE TICK AS APPROPRIATE

1. Where is your organization located?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
UK	USA	Asia	Africa	Russia

2. Your organization can be classified as:

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Academic	Service/Government	Private Industry	Consultancy	Others

3. What is the size of your organization workforce?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10-50	51-100	101-500	500-1000	1000 and above

4. Are you involved in KMS practice in your organization?

Yes ☒ No ☐

5. If yes, what is your role in KMS practice in your organization?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
User	Trainer	Developer	Administrator	Consultant

6. What is your level of expertise with regard to KMS?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Experts	Very familiar	Familiar	Novice	No Idea

7. What are your years of experience in KMS practice?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-2yrs	3-5yrs	5-10yrs	11-15yrs	16-20yrs

8. Have you be evolved in any research on KMS?

Yes ☐ No ☒

9. Your highest level of education is:

☐

Diploma

☐1st degree☒

Master degree

☐

PhD. degree

10. Do you agree to be contracted for further inquiries on KMS issue?.

Yes

☐

No

☐

Your E-mail address:.....

Your Telephone no:.....

Your Name:.....SanusiYusuf.....

Your Organization Abubakar Tafawa Balewa University Bauchi

Your present position:.....Lecturer in ICT Consultancy Unit.....

SECTION B: ACCEPTABILITY OF THE PROPOSED KMS FRAMEWORK

Instruction: Please read each statement and give your opinion by ticking the box provided below.

1. An integrated KMS is the best approach to today dynamic business environment

☐

Strongly Agree

☒

Agree

☐

Disagree

☐

Strongly Disagree

☐

No Idea

2. KMS principle and concept should be embedded into organizational philosophy.

☐

Strongly Agree

☒

Agree

☐

Disagree

☐

Strongly Disagree

☐

No Idea

3. Culture influences the practice of KMS in organization.

☐

Strongly Agree

☐

Agree

☒

Disagree

☐

Strongly Disagree

☐

No Idea

4. The proposed KMS framework takes into consideration the key factors of KMS practice

☐

Strongly Agree

☒

Agree

☐

Disagree

☐

Strongly Disagree

☐

No Idea

5. Learning should be an integral part of KMS framework, because knowledge management is a continual process of incremental improvement and evolution and not a one-time effort.

☐ Strongly Agree ☒ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

6. Knowledge management and learning are critical factors for organizational long-term survival

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

7. Systems thinking are important for a KMS framework because it facilitates the linkage between KM initiative and the strategic goals and objectives of an organization.

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

8. Utilization of the principle of actionable information, dynamic thinking and human creativity enhance the level of efficiency of KMS practice in an organisation.

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

9. Competitive advantage, innovation and efficiency are the key benefits of implementing KMS in an organization.

☐ Strongly Agree ☒ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

10. The components of an Integrated KMS should consists of a Human-Social System, Technology System and Knowledge System

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

11. The proposed framework truly is an integrated KMS framework.

<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
Strongly Agree	Agree	Disagree	Strongly Disagree	No Idea

SECTION C: PERCEPTION ON THE ATTRIBUTES OF THE PROPOSED KMS

FRAMEWORK

1. Please rate the following attributes in terms of their important to the technological sub system of KMS

		Very Important	Important	Less Important	Not Important	Not Sure
a.	Infrastructure	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
b.	Technological Solutions	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
c.	Data Management	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
d.	System Functionality	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
e.	Interoperability	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
f.	System Integration	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
g.	Scalability	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
h.	Cost Effectiveness	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
i.	User Friendly	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
j.	Accessibility	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
k.	Security	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
l.	Information flow	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
m.	Architecture	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
n.	Multi media	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
o.	Web-based solution	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>
p.	Agent-based System	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; background-color: black; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>	<input style="width: 50px; height: 20px; border: 1px solid black;" type="checkbox"/>

2. Comments/Suggestions of this attributes:

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.....

3. Please rate the following attributes in terms of their important to the Human-Social sub system of KMS

	Very Important	Important	Less Important	Not Important	Not Sure
a. Experimentation.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Diversity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Adaptability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Change Management	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Stakeholders Forum	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Environmental analysis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Education and Training	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Collaboration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Communication	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Psychology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Self Leadership	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Re-engineering	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Networks of Experts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Content and Context	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Alignment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p. Government Policy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Comments/Suggestions of this attributes:

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5. Please rate the following attributes in terms of their important to the Knowledge sub system of KMS.

Very Important	Less Important	Not Important
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			Important			Not Sure
a.	Institutionalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Functionality	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Mission	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d.	Strategy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e.	Sponsorship	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f.	Integration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g.	Trust	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h.	Motivation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i.	Budget	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j.	Organization structure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k.	Documentation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l.	Organisation Culture	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m.	Knowledge Template	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n.	Commitment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o.	Measurement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p.	Data Protection and Privacy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Comments/Suggestions of this attributes:

.....

.....

.....

SECTION A: PERSONAL INFORMATION, PLEASE TICK AS APPROPRIATE

1. Where is your organisation located?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
UK	USA	Asia	Africa	Russia

2. Your organization can be classified as:

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Academic	Service/Government	Private Industry	Consultancy	Others

3. What is the size of your organization workforce?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10-50	51-100	101-500	500-1000	1000 and above

4. Are you involved in KMS practice in your organization?

Yes ☒ No ☐

5. If yes, what is your role in KMS practice in your organization?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
User	Trainer	Developer	Administrator	Consultant

6. What is your level of expertise with regard to KMS?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Experts	Very familiar	Familiar	Novice	No Idea

7. What are your years of experience in KMS practice?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-2yrs	3-5yrs	5-10yrs	11-15yrs	16-20yrs

8. Have you be evolved in any research on KMS?

Yes ☒ No ☐

9. Your highest level of education is:

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	--------------------------	-------------------------------------

Diploma 1st degree Master degree PhD. degree

10. Do you agree to be contracted for further inquiries on KMS issue?.

Yes ☒ No ☐

Your E-mail address:.....[REDACTED].....

Your Telephone no:....[REDACTED].....

Your Name:.....NG, CHING WA (DANIEL).....

Your Organization:.....PACIFIC PANYU GROUP

Your present position:.....SHAREHOLDER DIRECTOR.....

SECTION B: ACCEPTABILITY OF THE PROPOSED KMS FRAMEWORK

Instruction: Please read each statement and give your opinion by ticking the box provided below.

1. An integrated KMS is the best approach to today dynamic business environment

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

2. KMS principle and concept should be embedded into organizational philosophy.

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

3. Culture influences the practice of KMS in organization.

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

4. The proposed KMS framework takes into consideration the key factors of KMS practice

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

5. Learning should be an integral part of KMS framework, because knowledge management is a continual process of incremental improvement and evolution and not a one-time effort.

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Disagree	Strongly Disagree	No Idea

6. Knowledge management and learning are critical factors for organizational long-term survival

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Disagree	Strongly Disagree	No Idea

7. Systems thinking is important for a KMS framework because it facilitates the linkage between KM initiative and the strategic goals and objectives of an organization.

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Disagree	Strongly Disagree	No Idea

8. Utilization of the principle of actionable information, dynamic thinking and human creativity enhance the level of efficiency of KMS practice in an organisation.

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Disagree	Strongly Disagree	No Idea

9. Competitive advantage, innovation and efficiency are the key benefits of implementing KMS in an organization.

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Disagree	Strongly Disagree	No Idea

10. The components of an Integrated KMS should consists of a Human-Social System, Technology System and Knowledge System

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Disagree	Strongly Disagree	No Idea

11. The proposed framework truly is an integrated KMS framework.

<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
Strongly Agree	Agree	Disagree	Strongly Disagree	No Idea

SECTION C: PERCEPTION ON THE ATTRIBUTES OF THE PROPOSED KMS

FRAMEWORK

1. Please rate the following attributes in terms of their important to the technological sub system of KMS

		Very Important	Important	Less Important	Not Important	Not Sure
a.	Infrastructure	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
b.	Technological Solutions	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
c.	Data Management	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
d.	System Functionality	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
e.	Interoperability	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
f.	System Integration	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
g.	Scalability	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
h.	Cost Effectiveness	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
i.	User Friendly	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
j.	Accessibility	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
k.	Security	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
l.	Information flow	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
m.	Architecture	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
n.	Multi media	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
o.	Web-based solution	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>
p.	Agent-based System	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;">X</div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>	<div style="border: 1px solid black; padding: 2px 10px;"></div>

2. Comments/Suggestions of this attributes:

Let talk more in a focal group, or detailed survey

.....

...

.....
 ...

3. Please rate the following attributes in terms of their important to the Human-Social sub system of KMS

		Very Important	Important	Less Important	Not Important	Not Sure
a.	Experimentation.....	<input type="text"/>	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
b.	Diversity	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
c.	Adaptability	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
d.	Change Management	<input type="text"/>	<input type="text"/>	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>
e.	Stakeholders Forum	<input type="text"/>	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
f.	Environmental analysis	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
g.	Education and Training	<input type="text"/>	<input type="text"/>	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>
h.	Collaboration	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
i.	Communication	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
j.	Psychology	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
k.	Self Leadership	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
l.	Re-engineering	<input type="text"/>	<input type="text"/>	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>
m.	Networks of Experts	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
n.	Content and Context	<input type="text"/>	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
o.	Alignment	<input checked="" type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
p.	Government Policy	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="text"/>	<input type="text"/>

4. Comments/Suggestions of this attributes:

Talk more in a focal group

.....

5. Please rate the following attributes in terms of their important to the Knowledge sub system of KMS.

	Very Important	Important	Less Important	Not Important	Not Sure
a. Institutionalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Functionality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Mission	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Strategy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Sponsorship	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Integration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Trust	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Motivation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Budget	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Organization structure	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Organisation Culture	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Knowledge Template	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Commitment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Measurement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p. Data Protection and Privacy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Comments/Suggestions of this attributes:

Talk more in focus group

.....

.....

SECTION A: PERSONAL INFORMATION, PLEASE TICK AS APPROPRIATE

1. Where is your organisation located?

☐

UK

☐

USA

☒

Asia

☐

Africa

☐

Russia

2. Your organization can be classified as:

☐

Academic

☒

Service/Government

☐

Private Industry

☐

Consultancy

☐

Others

3. What is the size of your organization workforce?

☐

10-50

☐

51-100

☐

101-500

☐

500-1000

☒

1000 and above

4. Are you involved in KMS practice in your organization?

Yes

☒

No

☐

5. If yes, what is your role in KMS practice in your organization?

☐

User

☐

Trainer

☐

Developer

☒

Administrator

☐

Consultant

6. What is your level of expertise with regard to KMS?

☐

Experts

☒

Very familiar

☐

Familiar

☐

Novice

☐

No Idea

7. What are your years of experience in KMS practice?

☐

1-2yrs

☐

3-5yrs

☐

5-10yrs

☐

11-15yrs

☒

16-20yrs

8. Have you be evolved in any research on KMS?

Yes

☒

No

☐

9. Your highest level of education is:

☐
Diploma

☐
1st degree

☐
Master degree

☒
PhD. degree

10. Do you agree to be contracted for further inquiries on KMS issue?.

Yes ☒

No ☐

Your E-mail address: varol.asaf@gmail.com

Your Telephone no: +90-533-4105927

Your Name: Prof. Dr. Asaf Varol

Your Organization: Revolving Funds of Firat University Hospital

Your present position: Director of Revolving Funds

SECTION B: ACCEPTABILITY OF THE PROPOSED KMS FRAMEWORK

Instruction: Please read each statement and give your opinion by ticking the box provided below.

1. An integrated KMS is the best approach to today dynamic business environment

☒

Strongly Agree

☐

Agree

☐

Disagree

☐

Strongly Disagree

☐

No Idea

2. KMS principle and concept should be embedded into organizational philosophy.

☐

Strongly Agree

☒

Agree

☐

Disagree

☐

Strongly Disagree

☐

No Idea

3. Culture influences the practice of KMS in organization.

☒

Strongly Agree

☐

Agree

☐

Disagree

☐

Strongly Disagree

☐

No Idea

4. The proposed KMS framework takes into consideration the key factors of KMS practice

☐

Strongly Agree

☒

Agree

☐

Disagree

☐

Strongly Disagree

☐

No Idea

5. Learning should be an integral part of KMS framework, because knowledge management is a continual process of incremental improvement and evolution and not a one-time effort.

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

6. Knowledge management and learning are critical factors for organizational long-term survival

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

7. Systems thinking is important for a KMS framework because it facilitates the linkage between KM initiative and the strategic goals and objectives of an organization.

☐ Strongly Agree ☒ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

8. Utilization of the principle of actionable information, dynamic thinking and human creativity enhance the level of efficiency of KMS practice in an organisation.

☐ Strongly Agree ☒ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

9. Competitive advantage, innovation and efficiency are the key benefits of implementing KMS in an organization.

☐ Strongly Agree ☒ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

10. The components of an Integrated KMS should consists of a Human-Social System, Technology System and Knowledge System

☒ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ No Idea

11. The proposed framework truly is an integrated KMS framework.

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Disagree	Strongly Disagree	No Idea

SECTION C: PERCEPTION ON THE ATTRIBUTES OF THE PROPOSED KMS

FRAMEWORK

1. Please rate the following attributes in terms of their important to the technological sub system of KMS

		Very Important	Important	Less Important	Not Important	Not Sure
a.	Infrastructure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Technological Solutions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Data Management	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d.	System Functionality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e.	Interoperability	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f.	System Integration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g.	Scalability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h.	Cost Effectiveness	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i.	User Friendly	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j.	Accessibility	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k.	Security	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l.	Information flow	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m.	Architecture	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n.	Multi media	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o.	Web-based solution	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p.	Agent-based System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Comments/Suggestions of this attributes:

Actually, all attributes shown above are very important for the technological sub system of KMS. Despite Multi media, Web-based solution and Agent-based System are also very important, due to rapid changes in the technology, new technological solutions may be available.

3. Please rate the following attributes in terms of their important to the Human-Social sub system of KMS

		Very Important	Important	Less Important	Not Important	Not Sure
a.	Experimentation.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Diversity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Adaptability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d.	Change Management	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e.	Stakeholders Forum	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f.	Environmental analysis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g.	Education and Training	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h.	Collaboration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i.	Communication	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j.	Psychology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k.	Self Leadership	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l.	Re-engineering	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m.	Networks of Experts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n.	Content and Context	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o.	Alignment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p.	Government Policy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Comments/Suggestions of this attributes:

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5. Please rate the following attributes in terms of their important to the Knowledge sub system of KMS.

	Very Important	Less Important	Not Important
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			Important			Not Sure
a.	Institutionalism	<input type="text"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
b.	Functionality	<input type="text"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
c.	Mission	<input type="text"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
d.	Strategy	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
e.	Sponsorship	<input type="text"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
f.	Integration	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
g.	Trust	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
h.	Motivation	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
i.	Budget	<input type="text"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
j.	Organization structure	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
k.	Documentation	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
l.	Organisation Culture	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
m.	Knowledge Template	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
n.	Commitment	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
o.	Measurement	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
p.	Data Protection and Privacy	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

6. Comments/Suggestions of this attributes:

.....

.....

.....

EVALUATION OF KNOWLEDGE MANAGEMENT SYSTEM IMPLEMENTATION IN ICT DEPARTMENT OF NIGERIA POSTAL SERVICE

Introduction:

Seeking to improve the efficiency and effectiveness of operations in ICT Department, it has become imperative to adapt this Knowledge Management practise as a tool in realising significant and quantifiable results in the organisation.

This questionnaire therefore is designed to evaluate the availability of KM tool in NIPOST ICT and its impact on ICT Department and overall productivity of the Organisation. Be assured of our usual protection of information as you are requested to supply your best opinion on the questions.

Name:

Station:

Position:

A) PERSONAL

1. Have you attended any training in knowledge management? Yes ☐ No ☐
2. Is the training helpful in your job? Yes ☐ No ☐
3. Do you need further training in knowledge management? Yes ☐ No ☐
4. Please comment on the knowledge management training you attended

5. Which application do you use for knowledge management?

- a) Microsoft Shared Point ☐
- b) Yahoo-Group (nipost_ict@yahooogroup) ☐
- c) Knowledge Postal ☐
- d) NIPOST website ☐

6. How long have you been using the system?

- a) 1 – 3 Months ☐
- b) 4 – 6 Months ☐
- c) 7 – 12 Months ☐
- d) 12 – 24 Months ☐

7. What do you use the system for?

- a) Knowledge Sharing ☐

- b) Knowledge Capturing ☐
- c) Knowledge Storage ☐
- d) Communication ☐
- e) Knowledge Retrieval ☐

	SA	A	NS	D	SD
8. The system is user friendly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. The information in the system is relevant to my job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. The information in the system helps me to do my job better	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. The system allows me to learn from others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. The system allows me to share my experiences with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. The system has enhanced my performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B) DEPARTMENTAL

	SA	A	NS	D	SD
14. The system has enhanced collaboration in the ICT Department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. The system reduces staff movement for support services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. The system promotes sharing of experiences within staff in ICT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. The system contributes positively to staff efficiency in the ICT department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. The system has reduced the cost of transporting Skilled officer to rectify problems in other locations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. The system has increased the knowledge base of officers In the department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. The system has reduced risk of accident prone to officers that would have travelled. ☐ ☐ ☐ ☐ ☐

21. Please comment generally on the system (ICT yahoo group) as a tool for knowledge sharing

KEY

SA - Strongly Agree, A – Agree, NS - Not Sure, D – Disagree, SD - Strongly Disagree

**EVALUATION OF KNOWLEDGE MANAGEMENT SYSTEM IMPLEMENTATION IN
ICT DEPARTMENT OF NIGERIA POSTAL SERVICE**

Introduction:

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Name: IYEKEKPOLOR I. KINGSLEY

Station: EDO TERRITORY

Position: ICT OFFICER

C) PERSONAL

- | | | | | |
|--|-----|--|----|--------------------------|
| 22. Have you attended any training in knowledge management? | Yes | <input checked="checked" type="checkbox"/> | No | <input type="checkbox"/> |
| 23. Is the training helpful in your job? | Yes | <input checked="checked" type="checkbox"/> | No | <input type="checkbox"/> |
| 24. Do you need further training in knowledge management? | Yes | <input checked="checked" type="checkbox"/> | No | <input type="checkbox"/> |
| 25. Please comment on the knowledge management training you attended | | | | |

**It was an interesting training session delivered by the Head of ICT in Kaduna,
whereby ICT Officers were educated on how best to manage knowledge through**

dissemination of knowledge so as to improve effectiveness and efficiency in the workplace.

26. Which application do you use for knowledge management?

- | | |
|---|-------------------------------------|
| e) Microsoft Shared Point | <input type="checkbox"/> |
| f) Yahoo-Group (nipost_ict@yahooogroup) | <input checked="" type="checkbox"/> |
| g) Knowledge Postal | <input type="checkbox"/> |
| h) NIPOST website | <input type="checkbox"/> |

27. How long have you been using the system?

- | | |
|-------------------|-------------------------------------|
| e) 1 – 3 Months | <input type="checkbox"/> |
| f) 4 – 6 Months | <input type="checkbox"/> |
| g) 7 – 12 Months | <input type="checkbox"/> |
| h) 12 – 24 Months | <input checked="" type="checkbox"/> |

28. What do you use the system for?

- | | |
|------------------------|-------------------------------------|
| f) Knowledge Sharing | <input checked="" type="checkbox"/> |
| g) Knowledge Capturing | <input checked="" type="checkbox"/> |
| h) Knowledge Storage | <input type="checkbox"/> |
| i) Communication | <input checked="" type="checkbox"/> |
| j) Knowledge Retrieval | <input type="checkbox"/> |

	SA	A	NS	D	SD
29. The system is user friendly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. The information in the system is relevant to my job	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. The information in the system helps me to do my job better	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. The system allows me to learn from others	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. The system allows me to share my experiences with others	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. The system has enhanced my performance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D) DEPARTMENTAL

	SA	A	NS	D	SD
35. The system has enhanced collaboration in the ICT Department	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. The system reduces staff movement for support services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. The system promotes sharing of experiences within staff in ICT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. The system contributes positively to staff efficiency in the ICT department	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. The system has reduced the cost of transporting Skilled officer to rectify problems in other locations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. The system has increased the knowledge base of officers In the department	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. The system has reduced risk of accident prone to officers that would have travelled.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Please comment generally on the system (ICT yahoo group) as a tool for knowledge sharing					
<i>The ICT yahoo group has in no small way contributed to the growth and advancement of the ICT department in NIPOST. Through this group new ideas on how best address divers challenges in various Territories are obtained. Personally, this group has improved my knowledge base as some of the information and problem solving techniques shares in this forum has enhance my performance in the effective discharge of my duties.</i>					

KEY

SA - Strongly Agree, A – Agree, NS - Not Sure, D – Disagree, SD - Strongly Disagree

EVALUATION OF KNOWLEDGE MANAGEMENT SYSTEM IMPLEMENTATION IN ICT DEPARTMENT OF NIGERIA POSTAL SERVICE

Introduction:

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our usual protection of information as you are requested to supply your best opinion on the questions.

Name: EKPO ANDREW I.

Station: ASABA, DELTA TERRITORY

Position: MANAGER, ICT

E) PERSONAL

43. Have you attended any training in knowledge management? Yes ☐ No ☐

44. Is the training helpful in your job? Yes ☐ No ☐

45. Do you need further training in knowledge management? Yes ☐ No ☐

46. Please comment on the knowledge management training you attended

After the last ICT Training on Knowledge Management in Kaduna, I reaffirmed that knowledge gained but not transferred is a waste.

47. Which application do you use for knowledge management?

i) Microsoft Shared Point ☐

j) Yahoo-Group (nipost_ict@yahoogroup) ☐

k) Knowledge Postal ☐

l) NIPOST website ☐

48. How long have you been using the system?

i) 1 – 3 Months ☐

j) 4 – 6 Months ☐

k) 7 – 12 Months ☐

l) 12 – 24 Months ☐

49. What do you use the system for?

k) Knowledge Sharing ☐

l) Knowledge Capturing

m) Knowledge Storage ☐

n) Communication ☐

o) Knowledge Retrieval ☐

	SA	A	NS	D	SD
50. The system is user friendly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. The information in the system is relevant to my job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52. The information in the system helps me to do my job better	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. The system allows me to learn from others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. The system allows me to share my experiences with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55. The system has enhanced my performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

F) DEPARTMENTAL

	SA	A	NS	D	SD
56. The system has enhanced collaboration in the ICT Department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57. The system reduces staff movement for support services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
58. The system promotes sharing of experiences within staff in ICT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
59. The system contributes positively to staff efficiency in the ICT department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
60. The system has reduced the cost of transporting Skilled officer to rectify problems in other locations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
61. The system has increased the knowledge base Of officers in the department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
62. The system has reduced risk of accident prone to officers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

that would have travelled.

63. Please comment generally on the system (ICT yahoo group) as a tool for knowledge sharing

It has helped in no small measure in information dissemination and consequently, identified problems are promptly solved.

KEY

SA - Strongly Agree, A – Agree, NS - Not Sure, D – Disagree, SD - Strongly Disagree

EVALUATION OF KNOWLEDGE MANAGEMENT SYSTEM IMPLEMENTATION IN ICT DEPARTMENT OF NIGERIA POSTAL SERVICE

Introduction:

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This questionnaire therefore is designed to evaluate the availability of KM tool in NIPOST ICT and its impact on ICT Department and overall productivity of the Organisation. Be assured of our usual protection of information as you are requested to supply your best opinion on the questions.

Name: IBRAHIM ABDULLAHI BABATUNDE
Station: GPO ILORIN, KWARA TERRITORY
Position: ICT OFFICER

G) PERSONAL

64. Have you attended any training in knowledge management? Yes ☒ No ☐
65. Is the training helpful in your job? Yes ☒ No ☐
66. Do you need further training in knowledge management? Yes ☐ No ☐
67. Please comment on the knowledge management training you attended ☒

The knowledge so acquired has really improved my skills as sharing of knowledge with colleagues is much easier now than before.

68. Which application do you use for knowledge management?

- m) Microsoft Shared Point ☐
- n) Yahoo-Group (nipost_ict@yahoogroup) ☒
- o) Knowledge Postal ☐
- p) NIPOST website ☐

69. How long have you been using the system?

- m) 1 – 3 Months ☐
- n) 4 – 6 Months ☐
- o) 7 – 12 Months ☐
- p) 12 – 24 Months ☒

70. What do you use the system for?

- p) Knowledge Sharing ☒
- q) Knowledge Capturing ☐
- r) Knowledge Storage ☐
- s) Communication ☐
- t) Knowledge Retrieval ☐

	SA	A	NS	D	SD
71. The system is user friendly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
72. The information in the system is relevant to my job	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
73. The information in the system helps me to do my job better	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
74. The system allows me to learn from others	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
75. The system allows me to share my experiences with others	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
76. The system has enhanced my performance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

H) DEPARTMENTAL

	SA	A	NS	D	SD
77. The system has enhanced collaboration in the ICT Department	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
78. The system reduces staff movement for support services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
79. The system promotes sharing of experiences within staff in ICT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
80. The system contributes positively to staff	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

efficiency in the ICT department

81. The system has reduced the cost of transporting ☒ ☐ ☐ ☐ ☐
Skilled officer to rectify problems in other locations

82. The system has increased the knowledge base ☒ ☐ ☐ ☐ ☐
of officers In the department

83. The system has reduced risk of accident prone to officers ☒ ☐ ☐ ☐ ☐
that would have travelled.

84. Please comment generally on the system (ICT yahoo group) as a tool for knowledge sharing

ICT yahoo group has become a powerful tool of sharing knowledge in ICT Dept. It has promoted faster medium of passing information within the family.

KEY

SA - Strongly Agree, A – Agree, NS - Not Sure, D – Disagree, SD - Strongly Disagree